



THE ATHENS INSTITUTE FOR EDUCATION AND RESEARCH

Abstract Book

**17th Annual International Symposium on
Economic Theory, Policy and Applications
27-30 June 2022, Athens, Greece**

**Edited by
Henry Thompson & Olga Gkounta**

2022

17th Annual International
Symposium on Economic
Theory, Policy and Applications
27-30 June 2022, Athens, Greece

Edited by Henry Thompson & Olga
Gkounta

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TABLE OF CONTENTS

(In Alphabetical Order by Author's Family Name)

Preface	9
Editors' Note	11
Organizing & Scientific Committee	12
Conference Program	13
1. How Can Megaprojects be Environmentally Friendly? Case Studies on Some Ongoing Megaprojects in Egypt <i>Omar Abbas & Hussein Abbas</i>	18
2. Forgone of Student Care in Togo: State of Play and Analysis of the Determinants of Forgone of Care Based on An Ad-Hoc Survey on the Campus of the University of Lomé <i>Amèvi Patrice Alowou, Aurore Pelissier & Ezzo-Hanam Atake</i>	19
3. Economics and Science in the Age of Fear <i>Pier Giorgio Ardeni</i>	22
4. Changing Times and Expectations in Higher Education: How Faculty Can Optimize Their Time and Effort <i>Naeem Bajwa</i>	24
5. Factors Determining Successful Business-to-Business Salesforce Transition to Adapt to Changing Customer Needs <i>Geoffrey Bick & Rohini Singh</i>	25
6. Business Models for Sustainability: The Case of the Fashion Industry <i>Isabela Casares & Jose Carlos Pinho</i>	27
7. Traditional Justice System versus Mediation, from the Perspective of the Economic Analysis of Law <i>Jose Manuel Castillo Lopez</i>	29
8. An Empirical Analysis of the Complementarities and Substitutions Between Effects of CEO Regulatory Focus and Corporate Governance on Greenwashing <i>Yiwen Chen, Zheng Fan & Peihua Fan</i>	31
9. Mathematical Model of Hololens 2 Attitude for AR Support of Flight Simulator in Wrightbros Project <i>Krzysztof Cyran</i>	32
10. How Can we Effectively Help Students Overcome Math Anxiety and its Increased Effect During Pandemic Online Teaching? <i>Paola Di Muro</i>	34
11. Marketing Lebanese Identity Through People's Uprising: Promoting Ethnocentrism and Lebanese Products and Services <i>Nadia El Jiryas Azzam & Rene Sabbagh Ghattas</i>	35
12. An Analytic Approach to the Riemann Hypothesis <i>Giampiero Esposito & Paolo D'Isanto</i>	36
13. Generalization Analysis of CNNs for Classification on Spheres <i>Han Feng</i>	37

14.	The Impact of Financing Constraints on Cross Border M&As <i>George Georgopoulos</i>	38
15.	Measuring the Level of Technology in Moral Economics <i>Zsófia Hajnal</i>	39
16.	Strategic Leadership and Change Management <i>Dihya Hessas</i>	40
17.	Dyadic Business Relationships within B2B Services in Developing Countries - Lessons from the Pharmaceutical Distribution Sector in Vietnam <i>Frédéric Jallat</i>	41
18.	Experience Marketing in Music <i>Radmila Janicic</i>	42
19.	Greek Women in Mathematics: From Antiquity to AI <i>Alexandra Kapatou</i>	43
20.	An Established Knowledge-based Economy: The Key Strategy to Facilitating Economic Recovery and Growth post COVID-19 in Botswana <i>Kelebogile Kenalemang & Kelello Stephens</i>	44
21.	Association Between Temperature and Suicide Attempts: A Time-Stratified Case-Crossover Analysis <i>Seunghyeon Kim & Eunsik Park</i>	45
22.	Exploring the Probabilistic Reasoning in Tasks Involving Uncertainty <i>Ida Kukliansky</i>	47
23.	Teaching Two Essential Soft Communication Skills Together: Time Management and Conflict Resolution Training in Undergrad Course <i>Laura Lambdin</i>	48
24.	An Impact the Losh's Regional Study for Russian State - Market Economy <i>Dmitry Melnikov</i>	49
25.	The Role of Integrated Marketing Communications in Creation of Destination Brand Equity During the COVID-19 Pandemic <i>Josip Mikulic & Maja Seric</i>	50
26.	Transformation of the Transportation Sector: The Emergence of Intermediaries in Digital Services Related to Transportation <i>Fatima Ez-zahra Moustaid</i>	51
27.	Optimizing Shop Replenishment with Product Deterioration over Time <i>Jesus Munuzuri, Luis Onieva & Jose Guadix</i>	52
28.	Copula Models for Tri-variate Exponential Distribution <i>Ampalavanar Nanthakumar</i>	54
29.	Marketing Skills in High Demand: Exploratory Study of Competencies for a Marketing Professional <i>Heidi Neuvonen & Maria Pecoraro</i>	56

30.	Virtual Exhibition on the Occasion of the 75th Anniversary of the Mathematical Institute SANU <i>Maja Novakovic, Marija Segan-Radonjic & Dejan Vukelic</i>	58
31.	Decline and Fall: An Exploration of the PISA and TIMSS Rubrics' Effect on Mathematical Curricula and Pedagogies <i>Diarmuid O'Driscoll</i>	60
32.	Teaching Project Management in Higher Education: A Systematic Literature Review and Future Perspectives <i>Michael Pace</i>	61
33.	Revealing the Trust-loyalty Relationship in Tourism Local accommodation: The Pandemic COVID-19 Crisis <i>Jose Carlos Pinho, Sónia Nogueira & Isabel Maria Macedo</i>	62
34.	Trade-off Between Mass Customization and Choice Overload: An Eye-Tracking Study to Determine the Role of Information Processing in Online Configurations <i>Judith Pottbaecker</i>	63
35.	A Study of Expected Demand and Aggregate Employment in the United States from 1948 to 2021 <i>Jan Reid</i>	65
36.	An Application of Finite Mixture Models in Positional Accuracy <i>Jose Rodriguez-Avi, Jose Maria Rodriguez-Reinoso & Julia Rodríguez-Reinoso</i>	66
37.	Financial and Social Implications of DC Pension Funds Aggregation <i>Ravit Rubinstein-Levi & Haim Kedar-Levy</i>	68
38.	Chinese FDI in Ghana: Impacts, Threats and Opportunities <i>Elisabeth Springler & Nathalie Homlong</i>	69
39.	A Study in Discrete Time of Trichotomic Issues <i>Codruta Stoica</i>	70
40.	Toroids, 3-Triangulation and Graph of Connection <i>Milica Stojanović</i>	71
41.	Female Labor Supply and International Trade <i>Andrey Stoyanov</i>	72
42.	Motivation and Development - Using Poly-Universe Game in Teaching Mathematics <i>Ilona Teglas</i>	73
43.	Economic Impacts of the Free Trade Agreement Between the European Union and Colombia <i>Joan Miguel Tejedor Estupiñán</i>	74
44.	Some Empirical Evidence on Comparative Advantage and Net Exports <i>Henry Thompson</i>	76
45.	Limit Laws in the Lattice Problem <i>Julien Trevisan</i>	77
46.	Teaching for Metacognition in a College Calculus Course <i>Aaron Trocki</i>	78

47.	Existence and Boundary Behavior of Positive Solutions for a Coupled Fractional System <i>Sameh Turki</i>	80
48.	Teaching, Research, and Service as Drivers of Academic Career Success <i>Otmar Varela</i>	81
49.	Natural Deduction for Quantified Pure Imperative Logic <i>Peter Vranas</i>	83
50.	Advancing Work- And Family- Associated Outcomes for Employees of Small and Medium Enterprises in Hong Kong: A Study on Workplace Supervisor Support with Smartphone-Based and Capacity-Building Interventions <i>Lina Vyas</i>	84
51.	Crossing the Chasm: The Case of Taiwan's Electric Scooters <i>Ching-Yan Wu</i>	86
52.	On the Use of Copula for Quality Control Based on an AR(2) Model <i>Timothy Young & Ampalavanar Nanthakumar</i>	88
53.	Optimum Allocations for Exponential Trials Maroussa Zagoraïou, Rosamarie Frieri & Alessandro Baldi Antognini	89
54.	FDI Flows and the Effects of the Shadow Economy: Evidence from Gravity Modelling <i>Tobias Zander</i>	90
55.	The Perceived Importance of Factors Affecting the Risks and Benefits of Cloud Computing: A Managers' Perspective <i>Cataldo Zuccaro, Michel Plaisent, Younes Benslimane & Prosper Bernard</i>	91
References		93

Preface

This book includes the abstracts of all the papers presented at the 17th Annual International Symposium on Economic Theory, Policy and Applications (27-30 June 2022), organized by the Athens Institute for Education and Research (ATINER).

A full symposium program can be found before the relevant abstracts. In accordance with ATINER's Publication Policy, the papers presented during this symposium will be considered for inclusion in one of ATINER's many publications only after a blind peer review process.

The purpose of this abstract book is to provide members of ATINER and other academics around the world with a resource through which they can discover colleagues and additional research relevant to their own work. This purpose is in congruence with the overall mission of the association. ATINER was established in 1995 as an independent academic organization with the mission to become a forum where academics and researchers from all over the world can meet to exchange ideas on their research and consider the future developments of their fields of study.

To facilitate the communication, a new references section includes all the abstract books published as part of this symposium (Table 1). I invite the readers to access these abstract books –these are available for free– and compare how the themes of the symposium have evolved over the years. According to ATINER's mission, the presenters in these symposiums are coming from many different countries, presenting various topics.

Table 1. *Publication of Books of Abstracts of Proceedings, 2010-2022*

Year	Papers	Countries	References
2022	55	30	Thompson H and Gkounta O (2022)
2021	38	19	Papanikos (2021)
2020	44	25	Papanikos (2020)
2019	93	33	Papanikos (2019)
2018	83	33	Papanikos (2018)
2017	18	17	Papanikos (2017)
2016	22	17	Papanikos (2016)
2015	30	18	Papanikos (2015)
2014	25	16	Papanikos (2014)
2013	54	33	Papanikos (2013)
2012	52	29	Papanikos (2012)
2011	84	30	Papanikos (2011)
2010	82	30	Papanikos (2010)

It is our hope that through ATINER's conferences and publications, Athens will become a place where academics and researchers from all over the world can regularly meet to discuss the developments of their disciplines and present their work. Since 1995, ATINER has organized more than 400 international conferences and has published over 200 books. Academically, the institute is organized into 6 divisions and 37 units. Each unit organizes at least one annual conference and undertakes various small and large research projects.

For each of these events, the involvement of multiple parties is crucial. I would like to thank all the participants, the members of the organizing and academic committees, and most importantly the administration staff of ATINER for putting this symposium and its subsequent publications together. Specific individuals are listed after the Editors' Note.

Gregory T. Papanikos
President

Editors' Note

These abstracts provide a vital means to the dissemination of scholarly inquiry in the field of Economics. The breadth and depth of research approaches and topics represented in this book underscores the diversity of the symposium.

ATINER's mission is to bring together academics from all corners of the world in order to engage with each other, brainstorm, exchange ideas, be inspired by one another, and once they are back in their institutions and countries to implement what they have acquired. The 17th Annual International Symposium on Economic Theory, Policy and Applications accomplished this goal by bringing together academics and scholars from 30 different countries (Algeria, Austria, Botswana, Canada, China, Colombia, Croatia, Egypt, Finland, France, Germany, Hong Kong, Hungary, Ireland, Israel, Italy, Lebanon, Morocco, Norway, Poland, Portugal, Romania, Russia, Serbia, South Africa, South Korea, Spain, Taiwan, Tunisia, and USA), which brought in the conference the perspectives of many different country approaches and realities in the field.

Publishing this book can help that spirit of engaged scholarship continue into the future. With our joint efforts, the next editions of this symposium will be even better. We hope that this abstract book as a whole will be both of interest and of value to the reading audience.

Henry Thompson & Olga Gkounta
Editors

17th Annual International Symposium on Economic Theory, Policy and Applications, 27-30 June 2022, Athens, Greece

Organizing & Scientific Committee

All ATINER's conferences are organized by the Academic Council. This symposium has been organized with the assistance of the following academic members of ATINER, who contributed by reviewing the submitted abstracts and papers.

1. Gregory T. Papanikos, President, ATINER & Honorary Professor, University of Stirling, U.K.
2. Henry Thompson, Head, Economics Unit, ATINER & Emeritus Professor, Auburn University, USA.
3. Chris Sakellariou, Vice President of Finance, ATINER & Associate Professor of Economics, Nanyang Technological University, Singapore.
4. Sharon Claire Bolton, Vice President of Research, ATINER & Emeritus Professor, The Management School, University of Stirling, Scotland.
5. Timothy M. Young, Director, Center for Data Science (CDS) & Professor and Graduate Director, The University of Tennessee, USA.
6. Philip G. Cerny, Director, Social Sciences Division, ATINER & Professor Emeritus, University of Manchester (UK) and Rutgers University (USA).
7. Nikolaos I. Liodakis, Associate Professor, Wilfrid Laurier University, Canada.
8. Paul Contoyannis, Associate Professor & Director of Graduate Studies, McMaster University, Canada.
9. Peter Koveos, Professor of Finance, Syracuse University, USA.
10. Cleopatra Veloutsou, Professor of Brand Management, University of Glasgow, U.K.
11. Codruta Simona Stoica, Head, Mathematics & Statistics Research Unit, ATINER & Professor and Vice-Rector, Aurel Vlaicu University of Arad, Romania.
12. Theodore Trafalis, Professor of Industrial & Systems Engineering and Director, Optimization & Intelligent Systems Laboratory, The University of Oklahoma, USA.
13. Ampalavanar Nanthakumar, Academic Member, ATINER & Professor State University of New York at Oswego, USA.
14. Angelos Tsaklanganos, Emeritus Professor, Aristotle University of Thessaloniki, Greece.

FINAL CONFERENCE PROGRAM

17th Annual International Symposium on Economic Theory, Policy and Applications, 27-30 June 2022, Athens, Greece

PROGRAM

Monday 27 June 2022

09:00-09:30
Registration

09:30-10:00
Opening and Welcoming Remarks:
○ Gregory T. Papanikos, President, ATINER

10:00-11:30 TIME SLOT 1 - MORNING PRESENTATIONS

Time Slot 1a	Time Slot 1b
<p>Coordinator: Paul Contoyannis, Head, <u>Health Economics & Management Unit</u>, ATINER & Associate Professor, McMaster University, Canada.</p> <ol style="list-style-type: none"> Elisabeth Springler, Program Director/Professor, University of Applied Sciences, bfi Vienna, Austria. Nathalie Homlong, Professor, Volda University College, Norway. <i>Title: Chinese FDIs in Ghana: Impacts, Threats and Opportunities.</i> Henry Thompson, Head, <u>Economics Unit</u>, ATINER & Professor Emeritus, Auburn University, USA. <i>Title: Some Empirical Evidence on Comparative Advantage and Net Exports.</i> Joan Miguel Tejedor Estupiñán, Associate Professor, Universidad Católica de Colombia, Colombia. <i>Title: Economic Impacts of the Free Trade Agreement Between the European Union and Colombia.</i> Naeem Bajwa, Associate Professor, University of Arkansas, Little Rock, USA. <i>Title: Changing Times and Expectations in Higher Education: How Faculty Can Optimize Their Time and Effort.</i> 	<p>Coordinator: Timothy M. Young, Director, Center for Data Science (CDS) and Head, <u>Industrial Engineering Unit</u>, ATINER & Professor and Graduate Director, The University of Tennessee, USA.</p> <ol style="list-style-type: none"> Cataldo Zuccaro, Professor, University of Quebec in Montreal, Canada. <i>Title: The Perceived Importance of Factors Affecting the Risks and Benefits of Cloud Computing: A Managers' Perspective.</i> Geoffrey Bick, Professor, University of Cape Town, South Africa. <i>Title: Factors Determining Successful Business-to-Business Salesforce Transition to Adapt to Changing Customer Needs.</i> Tobias Zander, PhD Student, University of Wuppertal, Germany. <i>Title: FDI Flows and the Effects of the Shadow Economy: Evidence from Gravity Modelling.</i>

11:30-13:00 TIME SLOT 2 - NOON PRESENTATIONS

Time Slot 2a	Time Slot 2b
<p>Coordinator: Henry Thompson, Head, <u>Economics Unit</u>, ATINER & Professor Emeritus, Auburn University, USA.</p> <ol style="list-style-type: none"> Pier Giorgio Ardeni, Professor, University of Bologna, Italy. 	<p>Coordinator: Ampalavanar Nanthakumar, Academic Member, ATINER & Professor, State University of New York, USA.</p> <ol style="list-style-type: none"> Codruta Stoica, Head, <u>Mathematics & Statistics Unit</u>, ATINER & Professor, "Aurel Vlaicu"

<p><i>Title: Economics and Science in the Age of Fear.</i></p> <p>2. Jesus Munuzuri, Professor, University of Seville Spain. Luis Onieva, Professor, University of Seville Spain. <i>Title: Optimizing Shop Replenishment with Product Deterioration over Time.</i></p> <p>3. Omar Abbas, Project Manager, EHAF Consulting Engineers Egypt. <i>Title: How can Megaprojects be Environmentally Friendly? Case Studies on some Ongoing Megaprojects in Egypt.</i></p> <p>4. Jan Reid, President, Coast Economic Consulting, USA. <i>Title: A Study of Expected Demand and Aggregate Employment in the United States from 1948 to 2021.</i></p>	<p>University of Arad, Romania. <i>Title: A Study In Discrete Time of Trichotomic Issues.</i></p> <p>2. Diarmuid O'Driscoll, Head, Mary Immaculate College, Ireland. <i>Title: Decline and Fall: An Exploration of the PISA and TIMSS Rubrics' Effect on Mathematical Curricula and Pedagogies.</i></p> <p>3. Jose Rodriguez-Avi, Professor, University of Jaén, Spain. <i>Title: An Application of Finite Mixture Models in Positional Accuracy.</i></p> <p>4. Peter Vranas, Professor, University of Wisconsin-Madison, USA. <i>Title: Natural Deduction for Quantified Pure Imperative Logic.</i></p>
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13:00-14:30 TIME SLOT 3 – NOON PRESENTATIONS

Time Slot 3a	Time Slot 3b
<p>Coordinator: Joan Miguel Tejedor Estupiñán, Associate Professor, Universidad Católica de Colombia, Colombia.</p> <p>1. Jose Carlos Pinho, Associate Professor, University of Minho, Portugal. <i>Title: Revealing the Trust-loyalty Relationship in Tourism Local accommodation: The Pandemic Covid-19 Crisis.</i></p> <p>2. Frédéric Jallat, Professor, ESCP, France. <i>Title: Dyadic Business Relationships within B2B Services in Developing Countries – Lessons from the Pharmaceutical Distribution Sector in Vietnam.</i></p> <p>3. Isabela Casares, Specialist in Product Design, University of Minho, Portugal. <i>Title: Business Models for Sustainability: The Case of the Fashion Industry.</i></p> <p>4. George Georgopoulos, Associate Professor, York University, Canada. <i>Title: The Impact of Financing Constraints on Cross Border M&As.</i></p>	<p>Coordinator: Codruta Stoica, Head, <u>Mathematics & Statistics Unit</u>, ATINER & Professor, “Aurel Vlaicu” University of Arad, Romania.</p> <p>1. Timothy M. Young, Director, Center for Data Science (CDS) and Head, <u>Industrial Engineering Unit</u>, ATINER & Professor and Graduate Director, The University of Tennessee, USA. <i>Title: On the use of Copula for Quality Control based on an AR(2) Model.</i></p> <p>2. Ampalavanar Nanthakumar, Professor, State University of New York, USA. <i>Title: Copula Models for Tri-variate Exponential Distribution.</i></p> <p>3. Maroussa Zagoraiou, Associate Professor, University of Bologna Italy. Alessandro Baldi Antognini, Professor, University of Bologna, Italy. <i>Title: Optimum Allocations for Exponential Trials.</i></p>

14:30-15:30

Lunch

15:30-17:30 TIME SLOT 4 – AFTERNOON PRESENTATIONS

Time Slot 4a	Time Slot 4b
<p>Coordinator: Mr. Konstantinos Manolidis</p> <p>1. Jose Manuel Castillo Lopez, Professor, University of Granada, Spain. <i>Title: Traditional Justice System versus Mediation, from the Perspective of the Economic Analysis of Law.</i></p>	<p>Coordinator: Ms. Olga Gkounta, Researcher, ATINER.</p> <p>1. Giampiero Esposito, Professor, University Complex of Monte Sant' Angelo, Italy. <i>Title: An Analytic Approach to the Riemann</i></p>

<p>2. Josip Mikulic, Professor, University of Zagreb, Croatia. Maja Seric, Associate Professor, University of Valencia, Spain. <i>Title: The Role of Integrated Marketing Communications in Creation of Destination Brand Equity during the COVID-19 Pandemic.</i></p> <p>3. Dihya Hessas, PhD Student, Mouloud Mammeri University of Tizi-Ouzou, Algeria. <i>Title: Strategic Leadership and Change Management.</i></p> <p>4. Laura Lambdin, Assistant Professor, University of South Carolina, USA. <i>Title: Teaching Two Essential Soft Communication Skills Together: Time Management and Conflict Resolution Training in Undergrad Course.</i></p> <p>5. Michael Pace, Assistant Professor, Texas A&M University, USA. <i>Title: Teaching Project Management in Higher Education: A Systematic Literature Review and Future Perspectives.</i></p> <p>6. Otmar Varela, Professor, University of Arkansas, Little Rock, USA. <i>Title: Teaching, Research, and Service as Drivers of Academic Career Success.</i></p>	<p><i>Hypothesis.</i></p> <p>2. Milica Stojanović, Professor, University of Belgrade, Serbia. <i>Title: Toroids, 3-Triangulation and Graph of Connection.</i></p> <p>3. Paola Di Muro, Professional Associate, Brandon University, Canada. <i>Title: How Can we Effectively Help Students Overcome Math Anxiety and its Increased Effect during Pandemic Online Teaching?</i></p> <p>4. Alexandra Kapatou, Senior Lecturer, American University, USA. <i>Title: Greek Women in Mathematics: From Antiquity to AI.</i></p> <p>5. Aaron Trocki, Associate Professor, Elon University, USA. <i>Title: Teaching for Metacognition in a College Calculus Course.</i></p>
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20:30-22:30

Greek Night

Tuesday 28 June 2022

TIME SLOT 5 - MORNING PRESENTATIONS

08:30-10:00 Time Slot 5a1	08:00-11:30 Time Slot 5b
<p>Coordinator: Mr. Konstantinos Manolidis</p> <p>1. Yiwen Chen, Postgraduate Student, Shanghai International Studies University, China. Zheng Fan, Professor, Shanghai International Studies University, China. Peihua Fan, Associate Professor, Shanghai International Studies University, China. <i>Title: An Empirical Analysis of the Complementarities and Substitutions between Effects of CEO Regulatory Focus and Corporate Governance on Greenwashing.</i></p> <p>2. Ching-Yan Wu, Associate Professor, National Tsing Hua University, Taiwan. <i>Title: Crossing the Chasm: The Case of Taiwan's Electric Scooters.</i></p> <p>3. Lina Vyas, Associate Professor, The Education University of Hong Kong, Hong Kong. <i>Title: Advancing Work- And Family- Associated Outcomes for Employees of Small and Medium Enterprises in Hong Kong: A Study on Workplace Supervisor Support with Smartphone-Based and Capacity-Building Interventions.</i></p> <p>4. Kelebogile Kenalemang, Lecturer, Botswana Accountancy College, Botswana. <i>Title: An Established Knowledge-based Economy: The Key Strategy to Facilitating Economic Recovery and Growth post Covid 19 in</i></p>	<p>Old and New-An Educational Urban Walk</p> <p>The urban walk ticket is not included as part of your registration fee. It includes transportation costs and the cost to enter the Parthenon and the other monuments on the Acropolis Hill. The urban walk tour includes the broader area of Athens. Among other sites, it includes: Zappion, Syntagma Square, Temple of Olympian Zeus, Ancient Roman Agora and on Acropolis Hill: the Propylaea, the Temple of Athena Nike, the Erechtheion, and the Parthenon. The program of the tour may be adjusted, if there is a need beyond our control. This is a private event</p>

Botswana.	organized by ATINER exclusively for the conference participants. Some participants have videotaped the event. Click here for an example.
10:00-11:30 Time Slot 5a2	
<p>Coordinator: Mr. Konstantinos Manolidis</p> <ol style="list-style-type: none"> Seunghyeon Kim, Chonnam National University, South Korea. <i>Title: Association between Temperature and Suicide Attempts: A Time-Stratified Case-Crossover Analysis.</i> Han Feng, Assistant Professor, City University of Hong Kong, China. <i>Title: Generalization Analysis of CNNs for Classification on Spheres.</i> Sameh Turki, Assistant Professor, University of Tunisia, Tunisia. <i>Title: Existence and Boundary Behavior of Positive Solutions for a Coupled Fractional System.</i> Ida Kukliansky, Senior Lecturer, Ruppin Academic Center, Israel. Yael Tal, Tel-Aviv University, Israel. <i>Title: Exploring the Probabilistic Reasoning in Tasks Involving Uncertainty.</i> 	

11:30-13:00 TIME SLOT 6 – NOON PRESENTATIONS

Time Slot 6a	Time Slot 6b
<p>Coordinator: Paul Contoyannis, Head, <u>Health Economics & Management Unit</u>, ATINER & Associate Professor, McMaster University, Canada.</p> <ol style="list-style-type: none"> Andrey Stoyanov, Professor, York University, Canada. <i>Title: Female Labor Supply and International Trade.</i> Heidi Neuvonen, Senior Lecturer, JAMK University of Applied Sciences, Finland. <i>Title: Marketing Skills in High Demand: Exploratory Study of Competencies for a Marketing Professional.</i> Fatima Ez-zahra Moustaid, PhD Student, Cadi Ayyad University, Morocco. <i>Title: Transformation of the Transportation Sector: The Emergence of Intermediaries in Digital Services Related to Transportation.</i> 	<p>Coordinator: Timothy M. Young, Director, Center for Data Science (CDS) and Head, <u>Industrial Engineering Unit</u>, ATINER & Professor and Graduate Director, The University of Tennessee, USA.</p> <ol style="list-style-type: none"> Krzysztof Cyran, Director of Virtual Flight Laboratory, Silesian University of Technology, Poland. <i>Title: Mathematical Model of Hololens 2 Attitude for AR Support of Flight Simulator in Wrightbro's Project.</i> Ilona Teglasi, Assistant Professor, Eszterhazy Karoly Catholic University, Hungary. <i>Title: Motivation and Development – Using Poly-Universe Game in Teaching Mathematics.</i> Maja Novakovic, Research Assistant, Mathematical Institute SANU, Serbia. Marija Segan-Radonjic, Researcher, Mathematical Institute SANU, Serbia. <i>Title: Virtual Exhibition on the Occasion of the 75th Anniversary of the Mathematical Institute SANU.</i> Julien Trevisan, PhD Student, Laboratory IMJ-PRG, France. <i>Title: Limit Laws in the Lattice Problem.</i>

13:00-14:30 TIME SLOT 7 – NOON PRESENTATIONS

<p>Coordinator: Adel Sakr, Lecturer, Webster University – Greek Campus, USA.</p> <ol style="list-style-type: none"> Ravit Rubinstein-Levi, Lecturer, Ben-Gurion University of the Negev, Israel. <i>Title: Financial and Social Implications of DC Pension Funds Aggregation.</i> Zsófia Hajnal, Visiting Lecturer, Budapest Business School, Hungary. <i>Title: Measuring the Level of Technology in Moral Economics.</i> Amèvi Patrice Alowou, PhD Student, University of Burgundy, France.
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Title: *Forgone of Student Care in Togo: State of Play and Analysis of the Determinants of Forgone of Care Based on An Ad-Hoc Survey on the Campus of the University of Lomé.*

14:30-15:30

Lunch

15:30-17:00 TIME SLOT 8 – AFTERNOON PRESENTATIONS

Coordinator: Mr. Konstantinos Manolidis

1. **Radmila Janicic**, Professor, University of Belgrade, Serbia.
Title: Experience Marketing in Music.
2. **Judith Pottbaecker**, PhD Student, Technical University of Munich, Germany.
Title: Trade-off between Mass Customization and Choice Overload: An Eye-Tracking Study to Determine the Role of Information Processing in Online Configurations.
3. **Dmitry Melnikov**, Associate Professor, Russia.
Title: An Impact the Losh's Regional Study for Russian State – Market Economy.
4. **Nadia El Jiryes Azzam**, Faculty Member, Lebanese American University, Lebanon.
Title: Marketing Lebanese Identity through People's Uprising: Promoting Ethnocentrism and Lebanese Products and Services.

20:00-21:30

Greek Home-Made Dinner (includes the traditional Greek household hospitality and quality)

Wednesday 29 June 2022
Educational Islands Cruise
Mycenae Visit

Thursday 30 June 2022
Delphi Tour

Omar Abbas

Project Manager, EHAF Consulting Engineers Egypt

&

Hussein Abbas

Chairman, Project Manager EHAF Consulting Engineers, Egypt

How Can Megaprojects be Environmentally Friendly? Case Studies on Some Ongoing Megaprojects in Egypt

Megaprojects are becoming the preferred model for delivering goods and services across a range of businesses and sectors. With the increasing interest in environmental issues and sustainable development, many countries seek to improve the investment climate without leading to the decay of the environment as a result of the growing economic activity. The aim of the paper is to assess the potential social, economic and environmental impacts of megaprojects. Three ongoing megaprojects in Egypt are analysed in this paper, namely: Suez Canal Economic Zone, El Dabaa Nuclear Power Plant, and Jabel El Zeit Wind Station. During the construction period, Egypt will witness huge changes in many fields. The young majority of the local workforce of the country will be employed. Huge investments will also be placed in the housing sector and infrastructure especially in transportation roads, railway networks, and in the electricity grid.

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&

Aurore Pelissier

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Esso-Hanam Atake

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**Forgone of Student Care in Togo:
State of Play and Analysis of the Determinants of Forgone
of Care Based on an Ad-Hoc Survey on the Campus of the
University of Lomé**

Brief Presentation of the Problem and its Stakes

Of the 1.8 billion young people in the world, 90% live in developing countries ¹(UNFPA, 2014). Projections (United Nations, 2019a) predict a 62% growth in this population by 2050 in the 47 least developed countries (including Togo). In Togo, young people represent 19.6% of the population in 2019 (United Nations, 2019b).

There are more than 1.5 million young people aged 10 to 24 who have died, or nearly 5,000 per day worldwide (WHO, 2021). The global average probability that a 10-year-old will die before the age of 24 is six times higher in sub-Saharan Africa than in the rest of the world (WHO, 2021). These figures are explained by the failure of health systems and/or the absence of policies specifically targeting this population (United Nations, 2019a).

Yet young people – and especially students – represent a major challenge for developing countries, particularly in the perspective of the Sustainable Development Goals. They will be the workers and parents of tomorrow in particularly fragile economies. Access to and equity in health care for young people is therefore a challenge for several countries in sub-Saharan Africa (Boltena *et al.*, 2012).

Based on an *ad-hoc* survey, we seek to better understand the state of health, health needs, access and use of care of students at the University of Lomé. More specifically, it will be a question of highlighting the behaviors of forgone of care. To this end, we will seek to identify to what extent Togolese students give up health care, what types of care

¹Persons aged 15 to 24 as defined by the United Nations.

are concerned, for what reasons and what factors may explain the forgone of care for financial reasons.

Originality of the Communication by Situating it in the Existing Literature

The reasons for renouncing care are diverse. Desprès (2012) distinguishes between barrier renunciation and renunciation-refusal. Barrier renunciation refers to the factors that can hinder access to health care, including informational, geographic, organizational barriers, but also financial barriers. Forgone-refusal refers to a desire of the individual not to seek care. If, thanks to the questionnaire we have developed, we will seek to characterize these different forms of forgone of care, particular emphasis will be placed on the forgone of care for financial reasons. Indeed, we know that financial barriers are one of the main obstacles to the use of care, particularly in developing countries where health financing is mainly based on direct payments; however, students are generally in precarious economic situations.

In Togo, there is very little health policy in favour of young people. In 2007, Togo's National Youth Policy for 2007-2011 was signed. This policy was intended to contribute to improving the state of health of teenagers and young Togolese but it has not been renewed.

In fact, we know very little about this student population: their state of health, their health needs, their health behaviours and recourse to care, their relationship to prevention, tobacco, alcohol consumption, their living conditions.

Indeed, to our knowledge, there are no studies specific to Togo to measure these phenomena. However, some data on the economic situation of students are available and suggest the value of collecting data on student health. For example, the poverty report presented by INSEED-TOGO showed that the incidence of poverty is 45.5% at the national level in Togo. Another report presented by the International Labour Office showed that a large proportion of young students face economic difficulties ² (Koné et K.S, 2013). Some students from disadvantaged strata are forced to do poorly paid activities. This precariousness is felt more among young female students. These results are found in other countries, not only developing but situations of economic precariousness combined with weak financial protection against disease risk can exacerbate the problems of giving up care in countries such as Togo.

²National Institute of Statistics and Economic and Demographic Studies of Togo.
Available at <https://inseed.tg/>. Accessed 21/05/2021

In sub-Saharan Africa, studies have been conducted in some countries to identify unmet care needs and barriers to accessing care among students. Boltena *et al.*, (2012) conducted a survey of students on the campus of the University of Uganda in 2005. The objective was to identify unmet health care needs as well as barriers to students' access to care. The results showed that two out of five students reported giving up medical care and one in five students reported unmet sexual health needs (Boltena *et al.*, 2012). The acceptability, availability and accessibility of health services were the main barriers to access to care that students said they faced (Boltena *et al.*, 2012).

Another study was conducted in Côte d'Ivoire among students by Inghels *et al.*, (2017). The results showed that the main barriers to accessing care were the perception of the high cost of these services and the lack of information. The main health problems reported by young students were malaria (54.3%), respiratory infections (44.6%), constipation problems (28.0%) and psychological disorders (25.9%) (Inghels *et al.*, 2017).

This study will be the first to our knowledge in Togo. In addition, this paper will contribute to enriching existing – but few – works on students' health and their use of care behaviours.

Methodological Approach Adopted: Source and Tools

The data come from an ad-hoc survey of students at the University of Lomé. The survey will be administered online, via the Lime Survey software. The questionnaire aims to collect information on: the living conditions of students, their lifestyle habits, their health behaviours and use of care, their state of health and health coverage.

A first statistical exploitation will make it possible to draw up a portrait of the students of the University of Lomé and then to characterize more particularly the renunciation of care. We will then study more precisely the renunciation of care for financial reasons via an econometric analysis.

Using a nested logit, we will estimate the factors that influence the likelihood of having given up care for financial reasons the last time respondents felt a need to consult. The factors we will retain come from the literature and we will rely in particular on the model of Andersen, (1995) who distinguishes between predisposing factors, facilitating factors and factors of need. We will use as explanatory variables: age, sex, insurance coverage, subjective state of health, level of diploma, level of education of parents, financial situation.

Pier Giorgio Ardeni
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Economics and Science in the Age of Fear

Far right and populist political movements are rampant in many countries – brewing on uncertainty and fear in the light of the pandemic and the environmental breakdown – affecting not only the governance of democratic regimes but also the science-policy relationship, the global environmental agenda as well as the pandemic public-health related agenda. In this paper, we disentangle the roots of such ‘far right and populist insurgency’ and discuss the implications for science and, in particular, for economics as a field. Both environmental policy and post-pandemic policy are rooted in approaches that stem from a vision of the scientific discourse as the dominant one. And yet, various forms of denials have come to the surface in recent times, questioning the relevance and authority of the scientific discourse. Post-truth arguments have been used to address this attitude.

It appears that to be able to understand and address this phenomenon, scientists, economists and policy makers should devote attention to analyze how the evolution of value systems (including health and environmental values) is related to the profile and governance of contemporary global capitalism. Populist nationalism has given way to new geographies of exclusion, interpreting the community of citizens in narrow, exclusionary terms, justifying the expulsion of ‘aliens’ from national space and the designation of certain citizens as foreign to the body politic.

The philosophical foundations of what used to be called “the scientific method” – and is nowadays simply known as the *scientific attitude* – have led as scientists to finally accept that approximate truths are perfectly adequate, and that “absolute truth” is an illusion. In popular culture, a new irrational sociological phenomenon called Post-Truth conveyed by social media, the Internet and fake news has developed in the Western world convincing millions of people that truth simply does not exist. In addition, the policies that have addressed the pandemic have been questioned at their roots, causing a philosophical “pandemonium”. The current COVID-19 health crisis is highlighting views and highlights that parallel the environmental crisis, as the pandemic produced a significant environmental jolt that has altered the trajectories of economies and institutions (with high inequalities stemming from its syndemic nature). In this paper, we review all of the above issues, trying to make sense of a global

uncertainty in the scientific discourse and the way it addresses
alternative views and policy propositions.

Naeem Bajwa

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Changing Times and Expectations in Higher Education: How Faculty Can Optimize Their Time and Effort

There are multiple factors driving the higher education industry, and instructors are required take on more and more responsibilities. Therefore, making our work more effective and efficient will allow us to continue to be competent instructors. In this paper, we present a method of examining our different activities, both logically and using operations methods. The logic is something that many use, even if unknowingly, but the operations methods suggest that there are ways to quantify the effect of time versus outcomes. Along with this, we have to consider that activities that worked in face to face classes might not work in virtual classrooms – Zoom or totally online. Our research is a call for design thinking in how we organize our class activities for effective and efficient outcomes for both students and instructions.

Geoffrey Bick

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&

Rohini Singh

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Factors Determining Successful Business-to-Business Salesforce Transition to Adapt to Changing Customer Needs

As a result of disruptive technologies being launched in the marketplace, customers have changing expectations from organisations. It is important to understand how these changing expectations are being met, particularly in business-to-business (B2B) sales organisations. Therefore, the purpose of this study was to focus on how B2B company salesforces are responding to customer and market pressures for better service and greater relationships. The objectives of the study were: (1) to identify the changes in customer expectations, (b) to determine the current challenges faced by the B2B sales organisation, and (c) to investigate the extent to which these changes and challenges are addressed. The literature review of these objectives identified six determinants for B2B salesforce transition that were tested in the research.

The study followed a mixed method approach whereby qualitative and quantitative research methods were employed, using purposive sampling. For the qualitative study, data was collected through personal interviews from a purposive sample of 6 respondents, which was content analysed to identify themes. For the quantitative study, an online survey was administered using a structured questionnaire on a convenience sample, and the data was analysed using Principal Components Analysis. The study identifies the emergence of new pressures and mandates which are changing management thinking about the “front-end” of organizations, and moving companies towards a change in the role of sales, account management and marketing. The analysis identified six factors critical to successful transition: Changed role of salespeople, Customer focussed strategy, New sales skills, New sales metrics, New operating model, and Internal development interventions.

It was found that the 4th Industrial Revolution (4IR) is heavily knowledge-based and requires new competencies for sales organisations to be successful, as well as new ways of doing business,

including strategic and operational changes to address the customer requirements.

The study provides a framework to implement the key requirements that have been identified for sales organisations to be successful in the era of change:

- a) the development and implementation of an enterprise-wide customer strategy that is integrated into the overall business strategy of the company,
- b) the establishment of new relevant sales metrics/performance measures aligned to the new strategy,
- c) the provision of sales enablement with respect to both operations and technology, and
- d) the building of strong customer relationships through focussed key account management principles and tools.

Isabela Casares

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&

Jose Carlos Pinho

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Business Models for Sustainability: The Case of the Fashion Industry

Sustainable fashion is currently at an important crossroads due to its huge impact on local communities and people's buying behaviours. Although the fashion industry operates in a highly competitive market dominated by global brands, it faces impressive social and ecological challenges because it has a huge climate change footprint, and if global consumers are demanding to tackle the existent threat of climate change, the fashion industry needs to urgently address its unsustainable practices, which is considered one of the largest polluting industries in the world. To address effectively these challenges, we need to undertake collective actions from different stakeholders, including individuals (or consumers), firms, suppliers, and governmental actors. We are increasingly experiencing emerging peer pressure, governmental initiatives, and consumer demands that are forcing firms to address ecological and social concerns in their business activities. Ultimately, fashion firms have to manage an important trade-off. On one hand, they should be profitable and offer economic value, on the other hand, they should be social and environmental oriented. Another topic that is addressed in the present study relates to the new Generation Z, which is a group of consumers that were born in 1995, and that are more tech-savvy and more green-oriented. In designing their products and promoting their brands, fashion firms should be aware of these groups of consumer's preferences and expectations. This study holds that to address effectively these concerns, fashion firms need to design appropriate business models (BM). A BM portrays the content, structure, and governance of transactions designed to create value through the exploitation and exploration of business opportunities (Amit and Zott, 2001, p. 511). The business model design is basically an abstract representation of the value flow, that comprises value creation, value capture, and value delivery. The link and functioning of these types of value are essential to the success of the firm. In light of the above considerations, this study contributes to advance knowledge on a sustainable BM in the fashion industry by addressing the following research questions:

- 1) How a sustainable business model within the fashion sector contributes to value creation, value capture, and value delivery?
- 2) How do fashion firms address generation Z?

Jose Manuel Castillo Lopez
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Traditional Justice System Versus Mediation, from the Perspective of the Economic Analysis of Law

Following a brief presentation of the current European and Spanish institutional framework in which each question unfolds, and employing the methodology of the Economic Analysis of Law that is clearly appropriate for the interdisciplinary study of these matters, starting from the pioneering contributions from R. Coase, I assess the main elements of the traditional justice system and some of the now so-called alternative dispute resolution systems (ADR), which may be employed, where it calls to do so, for the reform of their design and which, in short-medium term, constitutes a question that has now acquired a renewed interest following the entry into force of the new European framework of alternative resolution, and in line with consumer litigation.

The undertaking of the economic analysis of both systems is articulated in two fundamental concepts of the Economic Analysis of Law, these being the efficiency and equity both of the ordinary Judicial System and the ADRs, notwithstanding, of course, others such as transparency, legal certainty, etc.

In recent decades a number of private and public institutions have been drawing attention to deficiencies presented by the Judicial Administration in Spain, and in the same vein have been raising proposals of reform, although from an overall and scientific-technical viewpoint alternative dispute resolution (ADR) systems cannot be considered as competitors in the sense of alternatives to the ordinary judicial system.

In truth, they represent two ways of resolving social conflicts, of doing justice, but in those where the observance of citizens' legal guarantees should be reserved for the judicial system. To this end, ADR systems are not competing mechanisms in terms of being exclusive or alternative, rather, they are complementary, opening the possibility of companies and consumers using extrajudicial channels that are more agile and cost-effective when compared to the ordinary judicial process, in order to put an end to their litigations and claims.

The pioneering contributions of Coase, collected today by the Economic Analysis of Law and applied to the Legal System as a general approach, posits that a conflict can be resolved based on criteria of efficiency and equity, following the setting of property rights, via a

simple direct negotiation between the affected parties, either with or without the intervention of a third party (referee, mediator, friend, arbitrator, etc.), under the sole condition of the cost of accessing conflict resolution via the intervention of these agents is lower than the cost of the transaction.

Mediation in consumer activities in relation to the traditional justice system presents a series of elements whose employment is recommended, as they are able to collaborate in the improvement and efficiency of the management of justice in Spain and, therefore, to increase the well-being of the majority of the population. We refer, above all, to lower cost, shorter duration, greater transparency and, thus, foreseeability in the resolution of conflicts and, in addition, these advantages will increase with the incorporation of digital platforms in the management of these procedures.

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&

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An Empirical Analysis of the Complementarities and Substitutions Between Effects of CEO Regulatory Focus and Corporate Governance on Greenwashing

When it was vigorously promoted that companies ought to green management, the cases of greenwashing have gone sharply. The greenwashing of corporate refers that the companies engage in symbolic communication about environmental issues without addressing them substantially in actions, and we wonder the motivation for companies to greenwash. This study explores the antecedent variables that lead to the corporate greenwashing from the individual level and organizational level. At the individual level, we emphasize that CEO regulatory focus, one of the characteristics of executives, will affect the behavior of greenwashing. Meanwhile, at the organizational level, the corporate governance, such as the degree of independence of board of directors and the presence of strategic committee play an important role too. We also examine the interactive effect on greenwashing between CEO regulatory focus and corporate governance, to further study the complementary or the substituted effect. Moreover, in China's unique institutional context, the influence of market competition on the interactive effect will be taken into consideration. The hypotheses test through the empirical analysis of the panel data of Chinese companies in ASSET4 database from 2010 to 2015, and the CEO regulatory focus is measured through content analysis of annual report and shareholder letters. The results show the substituted relationship of CEO (with high promotion focus and low prevention focus) and high director independence or the existence of strategy committee, otherwise the complementary relationship between these two effects. Additionally, the market competition strengthens the interactive effects. This research provides a theoretical reference for Chinese companies in explaining the motivations for greenwashing and it also gives suggestions for them to reduce the behavior of greenwashing.

Krzysztof Cyran

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Mathematical Model of HoloLens 2 Attitude for AR Support of Flight Simulator in WrightBros Project

WrightBroS is the RISE (Research and Innovation Staff Exchange) project within EU Horizon 2020 MSCA part of “Excellent Science” pillar. The project, entitled “Working in a Collaborative Factory of the Flight Simulator Branch of RISE” is aimed to develop AR (Augmented Reality) support to service and maintenance of flight simulators manufactured by Virtual Reality Media from Slovakia. In addition, the AR system will be utilized to make training of pilots in flight simulators more effective by introducing “Learn as you go” paradigm. To achieve these goals, researchers from Silesian University of Technology by using equipment of Virtual Flight Laboratory are seconded to Virtual Reality Media (in Trencin, SK) and to LG Nexera (in Vienna, AT) SMEs. In the industrial environment, academic scientists are performing research on AR technology. One of essential issues is constant monitoring of the attitude of AR goggles in 3D environment of the flight simulator cockpit. Knowing this space attitude is a key to properly supplement actual environment with augmented reality holographic objects used in servicing and/or training. Therefore, a set of sensors is used by Microsoft HoloLens 2 goggles to detect head movements of the user (in our context either a technician while performing servicing of the flight simulator or a pilot executing training procedures). To be able to understand the meaning of the raw data taken from the HoloLens 2 sensors, we present the mathematical model relating the actual attitude (orientation) of holographic AR device in the real 3D space with the internal (virtual) computational scene. Not only classical representations which use Euler angles or unit quaternions to describe the orientation are addressed. In addition, kinematic representations using homogeneous matrix formulation in SE(3) group are used to describe configuration of holographic goggles in flight simulator environment. Such approach allows for tracing trajectory of the goggles as an object characterized by 6 DoF (Degrees of Freedom) by using a mathematical formulation of the Lie group. This leads to 6D representation of HoloLens 2 kinematics if Euler angles are used. Analogously, if orientation of goggles is expressed by using quaternions, it follows that a configuration space of a Cartesian product of SO(3) and \mathbb{R}^3 is replaced by a Cartesian product of S^3 and \mathbb{R}^3 , where

S^3 denotes the unit hypersphere in R^4 . Both approaches have their drawbacks and advantages, therefore it is useful to apply them dependent of the given context. The Euler angles approach is prone to the gimbal lock (which is improbable in the environment of flight simulator) but allows for Lagrangian formulation of dynamics. The quaternion approach on the other hand is gimbal lock free, but it does not support Lagrangian mechanics (due to existence of 7 parameters which is not a minimum number required as Lagrangian general coordinates). However, in our context only kinematics really matter, so both approaches are feasible. In addition to theoretical modelling, the results of experiments with actual device are presented together with the description of HoloLens 2 sensors which make possible collecting data used in relevant mathematical models.

Paola Di Muro

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How Can we Effectively Help Students Overcome Math Anxiety and its Increased Effect During Pandemic Online Teaching?

The pandemic has forced students into virtual learning of mathematics, paired with a decreased access to significant math resources, such as tutoring and supplemental instruction. Recently conducted studies agree that mathematical anxiety grew at all levels of instruction, while confidence and motivation tended to drop, especially toward the end of the semester (Soysal et al, 2022). Mendoza et al. (2021) conducted a study during the Fall 2020 semester at the Universidad Nacional de Chimborazo, showing a statistically significant difference in the level of students' understanding of mathematical content that was presented virtually. The study also demonstrated a correlation to increased levels of math anxiety during the COVID-19 pandemic.

Math anxiety, defined as a feeling of tension, apprehension, and fear about the personal ability to do math (Segen's Medical Dictionary) can be significantly moderated by math self-efficacy, which is defined as an individual's confidence in his or her ability to successfully perform or accomplish a particular task or problem (Hackett & Beta, 1989). During this session, we will discuss how math self-efficacy affects math performance and decreases math anxiety. We will then share some general strategies for improving math self-efficacy, and their potential for boosting individual learning and increase its efficiency. If time permits, we will also share some specific strategies aimed at helping students to develop a higher self-efficacy level.

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&

Rene Sabbagh Ghattas

Assistant Professor, Lebanese American University, Lebanon

Marketing Lebanese Identity Through People's Uprising: Promoting Ethnocentrism and Lebanese Products and Services

For centuries, Lebanon has been affected by a series of colonizations, foreign settlements, illegitimate occupations, oppressions, lack of freedom, internal and external conflicts and a deteriorating economic situation that led to an overwhelming brain drain. Those who departed have excelled and left a very positive impact in various economic, medical, political and social sectors in their countries of immigration. Those who stayed were very eager to leave Lebanon looking for new opportunities outside their country.

Suddenly, in an unprecedented move, Lebanese residing in Lebanon and those who have immigrated are united in a revolution, not along sectarian affiliation, which took hold of the country's identity for many years, but under a united goal to remove an inefficient, incompetent and corrupted government.

This research work consists of a series of semi-structured interviews focusing on how various individuals view their identity. The sample consists of both Lebanese individuals who immigrated during the last ten years and others still residing in Lebanon. The aim of the research is to study the attitude of Lebanese people towards their identity. A world known Lebanese author referred to this ambiguity by "*You have your Lebanon and I have my Lebanon.*" (Gibran, 1993).

However, because of the recent revolution, the researchers decided to analyze the attitude of the Lebanese population towards their identity before the uprising which will be called "First Period" (before October 17, 2019) and during/after the uprising which will be called "Second Period".

The researchers' objective is to understand this complex social phenomenon and develop a model to market the Lebanese identity in order to achieve a brain drain reversal hoping to boost the loyalty of the scattered diaspora to their homeland so that they can contribute towards the economic stability, intellectual and cultural revival and reconstruction of Lebanon. The researchers hope that this model will be followed by other countries.

Giampiero Esposito

Professor, University Complex of Monte Sant'Angelo, Italy

&

Paolo D'Isanto

Professor, University Complex of Monte Sant'Angelo, Italy

An Analytic Approach to the Riemann Hypothesis

In this work we consider an equation for the Riemann zeta-function in the critical half-strip. With the help of this equation we prove that finding non-trivial zeros of the Riemann zeta-function outside the critical line would be equivalent to the existence of complex numbers for which equation (5.1) in the paper holds. Such a condition is studied, and the attempt of proving the Riemann hypothesis is found to involve also the functional equation (6.26), where t is a real variable bigger than or equal to 1 and n is any natural number. The limiting behavior of the solutions as t approaches 1 is then studied in detail.

Han Feng

Assistant Professor, City University of Hong Kong, China

Generalization Analysis of CNNs for Classification on Spheres

In this talk, we present our recent work to develop some generalization analysis of a deep CNN algorithm for binary classification with data on spheres. An essential property of the classification problem is the lack of continuity or high smoothness of the target function associated with a convex loss function such as the hinge loss. This motivates us to consider the approximation of functions in the L_p space with $1 \leq p \leq \infty$. We provide rates of L_p -approximation when the approximated function lies in a Sobolev space and then present generalization bounds and learning rates for the excess misclassification error of the deep CNN classification algorithm. Our novel analysis is based on efficient cubature formulae on spheres and other tools from spherical analysis and approximation theory. This is a joint work with Shuo Huang and Ding-Xuan Zhou.

George Georgopoulos

Associate Professor, York University, Canada

The Impact of Financing Constraints on Cross Border M&As

Cross-border mergers and acquisitions (CBM&As) are a significant component of foreign direct investment, which in turn is at the heart of an international business strategy for an MNE. However, while there is a large theoretical and empirical literature documenting how these strategies are determined and implemented, there is a relative dearth in the literature on the role played by financial constraints, that is, the ability to finance the transaction. What is important is that a CBM&A involves both a scale and an immediacy to raising the financing that a greenfield FDI may lack. We hypothesize that financially constrained firms are inhibited from undertaking CBM&As, due to these two factors of scale and immediacy and further that these constraints are increasingly binding the less developed the financial market where the target firm is located. Evidence in support of these hypotheses is documented using firm-level data on CBM&As from OECD and BRIC countries into every country in the world for which data exists. The implication is that not only are financing constraints important in explaining the extent to which firms undertake CBM&As, but also that these constraints may have a significant impact on where acquiring firms target companies for acquisition.

Zsófia Hajnal

Visiting Lecturer, Budapest Business School, Hungary

Measuring the Level of Technology in Moral Economics

This largely theory-based paper attempts classifying and combining methods of orthodox and heterodox economics regarding the measurement of technology levels. The importance of measuring the level of technology is illustrated by technology being a key factor in several neoclassical models (e.g. the production function, total-factor-productivity). However, just as for the concept of utility, traditional economics treats the level of technology as an abstract scientific construct, without attempts for an absolute quantification. This paper argues that through a systematic classification and various methods, starting- and end points, milestones and even units of measuring the level of technology can be determined. After surveying the literature (with special regard to models involving technology levels, empirical methods and applications of technology level measurement, and the theory of innovations) the paper identifies the existing options of measurement, and their shortcomings. Technology is looked at as a “stock”, as opposed to the overrepresented “flow” nature, resulting in the dominance of relative measuring, as opposed to absolute scales and numbers. Contemplating the stock nature gives space for the methods of constructing an absolute scale, and for the unique concept of the “steady-state technology”. As for the classification, distinctions are made between demand-side and supply-side measurement of the level of technology, as well as between historical and geometrical methods of constructing scales. The methods are illustrated, though not fully implemented, due to restrictions in scale and scope. Finally, the paper shows how heterodox economic branches, such as the newly emerging moral economic school, allow for the demand-side measurement to a greater extent, given the adjusted economic axioms. This result, in turn, may lead to a novel viewpoint on future technologies, and to deeper incorporating the human needs aspect into technology’s definition.

Dihya Hesas

PhD Student, Mouloud Mammeri University of Tizi-Ouzou, Algeria

Strategic Leadership and Change Management

Change management is undoubtedly one of the major challenges facing companies today. The speed and velocity of environmental transformations are forcing organizations to implement large-scale changes in shorter periods of time. Only those companies that demonstrate a real ability to change will stand out.

Faced with all these organizational changes and the risk of disappearing, organizations must transform, rethink and redefine their structures and strategies. This new objective that organizations are imposing on themselves is far from being incompatible with their primary vocation of producing wealth and seeking profits (Boucher, 1974). In fact, the two objectives go hand in hand.

In order to reach their new objective, organizations must focus on the actor as the determining factor of their transformation. Indeed, it is this intangible dimension, the human dimension, that is the key to the success or failure of organizational change. According to Bareil (2004), "organizational change cannot be achieved without the contribution of individuals. Indeed, they are the ones who will enrich, improve, and give meaning to things so that the changes bring the expected results. This is the role of leadership, among others.

The role of leadership in organizational change is very important. Pluchart (2006, p. 32) defines leadership as "the ability of an individual to influence the behavior of a social group [...] It corresponds to a style of behavior, more or less authoritarian or cooperative, adapted to the constraints of a mission, to the personalities of a group and/or to the values of a socio-professional environment: the leader uses coercion, persuasion, exemplarity, manipulation, etc. in order to steer a group by influencing the behavior of its members, Indeed, the role of the leader in initiating and leading change is decisive, because "nothing is done without a leader".

Through an in-depth and critical analysis of the literature, we will try to determine the central role of the leader and the skills needed to lead a transformation process.

Frédéric Jallat

Professor, ESCP, France

Dyadic Business Relationships Within B2B Services in Developing Countries - Lessons from the Pharmaceutical Distribution Sector in Vietnam

The purpose of this study is to explore the real nature and peculiarities of dyadic business relationships within the B2B services network context of a developing economy (Awan, 2008; Biggemann & Fam, 2011; Dang & Cliquet, 2012; Dinh & Pickler, 2012; Lee & Dawes, 2005; Liu et al., 2008).

We selected the pharmaceutical distribution sector in Vietnam as our main field of investigation-taking into consideration the complex structure of relationships within the sector, the involving nature of exchanges that have a direct impact on human health, and the cultural dimensions of the service business context (Håkansson et al., 2004; Lee & Dawes, 2005; Liu et al., 2008).

Expectations of retailers (pharmacists) towards their suppliers were investigated in order to identify the main drivers of their satisfaction, and in order to analyze the current nature of buyer-seller relationships in a developing country (Andersen et al., 2008; Churchill & Surprenant, 1982; Parasuraman et al., 1985; Parasuraman et al., 1988; Seiders et al., 2005).

Radmila Janicic

Professor, University of Belgrade, Serbia

Experience Marketing in Music

The paper presents theoretical and practical aspects of experience marketing in music. The focus of the paper is to point out elements of experience marketing through music, in the way how music creates messages and experience. Goal of the paper is to analyze theoretical and practical aspects of experience marketing in music by experiential tools. The paper will present case studies about music, concerts and festivals. In the paper will be present in-depth interviews with professors of music theory and practice, as well as with musicians. Conclusions of the in-depth interviews will impact on future work on experience marketing in music. In case studies will present impact of music on social movement, raising awareness about social problems and dilemmas, raising awareness about thoughts, ideas, values, that otherwise could be unnoticed. One of the case studies will be present concert of classical and modern music. Special approach will be made on emotional branding of music's song, events, concert and festivals. Emotions are the key in implementation of strategies of experience marketing, by experiential tools. In in-depth interviews will be analyze impact music on emotions, marketing approach of segmentation of target audience, communications with audience through traditional and modern media. In empirical research will be use questionnaire for audience about experience with music events, about what raise their emotional involving with some songs, musicians, music, lyrics, what emotions connect them with songs. Through theoretical analyze, case studies, in-depth interviews with professors of music and musicians, questionnaire with audience and with qualitative observation, the paper will give conclusion about experience marketing in music.

Alexandra Kapatou
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Greek Women in Mathematics: From Antiquity to AI

We discuss the presence and contribution of Greek women in mathematical sciences from antiquity to artificial intelligence and machine learning. While the role of Hypatia has been recognized in recent years, even to the extent of a Hollywood production, little is broadly known about the part played by women of Greek heritage in earlier and subsequent developments through the Byzantine era, the Middle Ages, the Enlightenment, and later periods. Key to recognizing the broader participation of women is the expansion of the concept of mathematics to include probability and statistical applications throughout the natural and social sciences, focusing in particular in the underlying concept of risk.

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**An Established Knowledge-based Economy:
The Key Strategy to Facilitating Economic Recovery and
Growth post COVID-19 in Botswana**

Pandemics in their nature disrupt every aspect of people's lives in an unprecedented manner. More so than any prior pandemic, the COVID-19 has overwhelmed many people's lives, countless of its implications such as loss of jobs, loss of human life has led to a drop in the demand for goods and services, subsequently slowing down business performance and economic growth. The disruptive nature of COVID-19 pandemic puts governments, especially in developing nations, under immense pressure to act decisively and effectively in building better and emerging successfully from this crisis. Building better" and emerging from the crisis with sustainable economic recovery requires an integrated approach, an approach that anticipates further impacts of the pandemic and recovery measures that are inclusive and sustainable. As such, governments all over the world are on a gradual transition that is aimed at stimulating balanced and inclusive economic growth. Prior literature suggests that being an established knowledge-based economy can assist in facilitating economic growth and recovery. Consequently, the aim of this paper is to explore the role of an established knowledge-based economy as the decisive factor in any scenario of emergence from the crisis and economic recovery from the COVID-19 pandemic. In this context, the definition of a knowledge-based economy being used is one that is associated with high technological use, intense and rapid innovations, and a high reliance on knowledge to further the recovery & development of the economy. This paper presents the current state of the economy, educational system, broadband systems, and the investments made into research and development in the context of Botswana. An analysis of the immediate, medium, and long-term effects of the COVID-19 on economic development and elements for an integrated government approach for a fair and inclusive recovery and resilience are critically examined, using empirical data from Botswana. In the conclusion, the paper discusses the major issues that require attention to enable a knowledge-based Botswana.

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&

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Association between Temperature and Suicide Attempts: A Time-Stratified Case-Crossover Analysis

Several epidemiological studies have shown that short-term exposure to high temperature is related to increased mortality. Recent studies have reported that high temperature is not only associated with various human diseases, but also with the risk of emergency room visits and suicide due to mental illness. In Korea, there have been studies exploring the effects of high temperatures on the risk of emergency room visits due to mental illness, and it has been reported that the risk of mental illness increases as temperature increases. However, the data of the National Emergency Department Information System (NEDIS) often show that mental illness is not included in the diagnosis code even though they visited the emergency room in a suicide attempt while having a mental illness. Therefore, this study attempted to confirm the relationship with temperatures in emergency room visitors listed as self-harm and suicide in the NEDIS standard system diagram.

The subjects of the study are patients who visited the emergency room located in Seoul from 2014 to 2018 due to suicide attempts. The minimum, maximum temperature, daily temperature difference, relative humidity, sunshine duration, and cloud cover provided by the Korea Meteorological Administration were used as meteorological factors, and all the factors were converted into percentile values to compare with national meteorological factors. A time-stratified case-crossover design was applied and analyzed using the conditional quasi-Poisson regression model. The lag effect of the temperature percentile was explored using the distributed lag-nonlinear model.

From 2014 to 2018, the number of emergency room visits due to suicide attempts in Seoul was 30,012. With other meteorological factors confounded, the risk of suicide attempts increased significantly as the maximum temperature increased. On the other hand, there was no significant relationship between the minimum temperature. The relative risk at the 90th percentile value of the maximum temperature for suicide attempts at lag0 was 1.08 (95% CI: 1.03, 1.14) compared to the 1st percentile value. The relative risk was highest at lag 0, and it was significant up to lag 2, but there was no effect after that.

We found that exposure to maximum temperatures over a short period of time increases the risk of emergency room visits due to suicide attempts. These results suggest that the maximum temperature rather than the minimum can be a short-term trigger for suicide attempts.

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Exploring the Probabilistic Reasoning in Tasks Involving Uncertainty

This study explores the judgments of participants in probabilistic tasks which require comparing two probabilities either with or without introducing an additional manipulation of uncertainty. The novelty of this research is in exploring the probabilistic reasoning in tasks that involve an additional condition of uncertainty.

According to dual-process theorists two general types of reasoning processes tend to be used in making probabilistic judgments. On the one hand, people use analytic processes. On the other hand, people develop heuristics, intuitive rules for analyzing the probabilities. Inspired by many studies of understanding probability we used tasks of binary comparisons. A typical probabilistic task presents the participants with two containers of white and black balls: Urn A and Urn B. The first task, a comparison of probabilities (CP), asked participants to compare probabilities of randomly drawing a black ball from two different urns. The second task, an additional condition of uncertainty (ACU), asked participants to decide how the probability of randomly drawing a black ball from Urn B would change after transferring a randomly selected ball from Urn A to Urn B. These tasks differ in their content but can be solved analytically in the same way. The aim of the study was to explore if there is any difference in the accuracy and reaction time of responses between the CP task and the ACU task and to learn about the influence of the probability of transferring a black ball from urn A to Urn B on the responses. The participants were 66 college students (29 males and 37 females) who had previously studied a course in probability. They were presented with computerized tasks. A paired samples t-test, revealed significantly higher accuracy and higher response time in the CP task ($p < .01$), meaning that heuristics was used in the more difficult ACU task. Regarding the ACU task participants' responses were affected by the composition of Urn A, regardless of the composition of Urn B. To overcome this bias toward a deterministic thinking, a gradual method was developed that would build better intuition for the students.

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Teaching Two Essential Soft Communication Skills Together: Time Management and Conflict Resolution Training in Undergrad Course

Management training in the soft communication skills of conflict resolution and time management can be taught simultaneously to help increase awareness of both in undergraduate courses. Conflict between humans is unavoidable. Deadlines are necessary. Students involved in real-world style teams for courses will certainly face both.

Assertiveness and Cooperation are on spectrums (active listening versus avoidance); however, team problem solving means first assessing individual perspectives. This means equally hearing less loud, assertive voices. The ability to facilitate dialogue in a calm, intelligent, timely manner is an impressive skill. Aggressive angry responses can easily destroy a team's cohesion. This means managing big emotions without humiliating anyone through active listening and looking to emphasize understanding.

Time management allows us to accomplish more in less time. Conflict slows that process, but sometimes is beneficial to highlight an aspect requiring more insight. Sometimes, understanding the significant impact of robust time management lessens the need for conflict resolution.

If conflict is unavoidable, the time management training creates a window of opportunity for such talks to improve the situation, making third party time investment unnecessary. If conflict resolution by a third party is unavoidable, time management training can lower the cost of the interaction by shortening the amount of time needed for a successful employee response adjustment.

Both topics of time management and conflict resolution are more helpful presented together in a class with semester long team projects to increase morale, inspire, and motivate of those groups -- and by making both subjects clearer.

Dmitry Melnikov

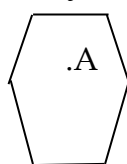
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An Impact the Losh's Regional Study for Russian State - Market Economy

An outstanding German economist August Losh was one of the founders of the regional economy. His main methodological idea is a hexagonal spatial pattern for regional economy (Figure 1).

Figure 1. *Hexagonal Spatial Pattern by A.Losh.*

Where. A – Regional Center



According to Losh the hexagonal spatial pattern is more useful for reduction of the transport costs. That why we may say that it also may be applied for Russian state market economy. It's possible due to such factor as Russian logistics.

In Russia logistics is more developed in Moscow and St.Petersburg. Logistics began in these two Russian cities in 18th century and now it is also advanced in these cities.

Nevertheless, for objective scientific approach we point out for significant obstacle concerns with the Losh's spatial pattern for Russia. I speak about strong federalism which negatively impact upon Russian economy and consequently slows its regional economy.

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&

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The Role of Integrated Marketing Communications in Creation of Destination Brand Equity During the COVID- 19 Pandemic

Integrated Marketing Communications (IMC) have been considered one of the key assets in brand equity building. The IMC approach relies on conveying a clear and consistent message about the brand through different marketing communications tools and channels. In the travel and tourism context, making sure that consumers receive a consistent image of the destination brand is now more important than ever, considering the uncertainties that the COVID-19 pandemic has brought to the sector. On the other hand, destination brand equity has been considered one of the most relevant topics in tourism marketing literature. The concept has been mostly examined through brand awareness, brand image, perceived quality, and brand loyalty. This paper examines the impact of IMC on brand equity of Croatia, a destination that has experienced a remarkable boom this season, regardless of the pandemic. Data collection took place among 333 tourists who visited the country mainly at the beginning of the final quarter of 2021. Findings reveal positive effects of IMC on four destination brand equity dimensions, i.e., brand awareness, brand image, perceived quality, and brand loyalty. The paper has a number of implications for authorities and destination marketing practitioners.

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**Transformation of the Transportation Sector:
The Emergence of Intermediaries in Digital Services
Related to Transportation**

Seen as a new business model, collaborative consumption is no longer just a marketing trend. It is propelled by the explosion of New Information and Communication Technologies (NICT), and the development of networks.

The ecological awareness, the emergence of social networks from the 2000s, the advent of the health crisis linked to the spread of Covid-19 around the world, have largely contributed to the popularization of this "fashion phenomenon" which wants to be a resistance against the so-called "traditional" modes of consumption. In this context, carpooling is also seen as a resistance to the diktats of official carriers. This new model, based on the digital services of intermediary providers, was born from the genesis of a spirit of collaborative consumption, the popularization of the use of social networks and comes to compensate for the deficiency of the transport offer during festive periods, or during peak hours, and during exceptional periods (case of health measures dictating restrictions on the mobility of individuals).

The subject of our study concerns the collaborative web platforms (and applications) of carpooling that have developed in recent years in Morocco, offering a new dynamic to the transport sector, and which are an essential tool in the use of collaborative practices. We are interested in this aspect because of the changes it induces at the level of consumption patterns, the transport sector and more broadly at the level of the economy.

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Optimizing Shop Replenishment with Product Deterioration over Time

In the current paradigm, which is experiencing a rapid evolution of the retail industry, especially in textile companies, the generic problem of product allocation in a distribution and supply chain consisting of one main warehouse and several locations is a challenge. The in-store replenishment process focuses on dynamically optimising a shop inventory across a wide range of products based on a forecast of sales from previous periods. In this context, the aim of this work is twofold: a) to optimise shop replenishment for products that are not perishable but devalue over time and b) to implement a methodology that combines the benefits of the PSO metaheuristic and Simulated Annealing. This study has been carried out for different periods, shops and product configurations by performing a sensitivity analysis between the way new solutions are updated and the degree of intensification used in local search.

The focus here is on solving the inventory management and in-store replenishment problem for a multi-product model, where products are sold in multiple locations and over various periods of time. The main objective of the problem is profit maximisation, understood as the difference between total revenues and total costs. These total costs include: out-of-stock costs (stock-outs), procurement, transport and storage.

The characteristics of this problem represent an enormous number of feasible combinations. Therefore, the methodology employed seeks the best solution until a stopping criterion is met. Therefore, the longer the simulation time, the better the chance of finding a better solution. The results show that when the generation of a new set of solutions has a strong influence/inferiority to the best solution found so far (weighted average), a higher profit is achieved. On the other hand, this profit is smaller when the solution generated takes into account a greater dependence on randomness. The positive point of randomness

is that it allows a larger number of different neighbourhoods to be tracked.

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Copula Models for Tri-variate Exponential Distribution

Here, we will try different Copula models to see which Copula model is appropriate for fitting the Tri-variate Exponential Distribution. The Cumulative Distribution Function for the Tri-variate Exponential Distribution is listed below.

$$\begin{aligned} F_{123}(x, y, z) = & 1 - e^{-(\lambda_1 + \lambda_{12} + \lambda_{13} + \lambda_{123})x} - e^{-(\lambda_2 + \lambda_{12} + \lambda_{23} + \lambda_{123})y} - e^{-(\lambda_3 + \lambda_{13} + \lambda_{23} + \lambda_{123})z} \\ & + e^{-(\lambda_1 + \lambda_{13})x - (\lambda_2 + \lambda_{23})y - (\lambda_{12} + \lambda_{123})\max(x, y)} \\ & + e^{-(\lambda_2 + \lambda_{12})y - (\lambda_3 + \lambda_{13})z - (\lambda_{23} + \lambda_{123})\max(y, z)} \\ & + e^{-(\lambda_1 + \lambda_{12})x - (\lambda_3 + \lambda_{13})z - (\lambda_{13} + \lambda_{123})\max(x, z)} \\ & - e^{-\lambda_1 x - \lambda_2 y - \lambda_3 z - \lambda_{12} \max(x, y) - \lambda_{13} \max(x, z) - \lambda_{23} \max(y, z) - \lambda_{123} \max(x, y, z)} \end{aligned}$$

Case 1: $x \leq y \leq z$

$$\begin{aligned} F_{123}(x, y, z) = & 1 - e^{-(\lambda_1 + \lambda_{12} + \lambda_{13} + \lambda_{123})x} - e^{-(\lambda_2 + \lambda_{12} + \lambda_{23} + \lambda_{123})y} - e^{-(\lambda_3 + \lambda_{13} + \lambda_{23} + \lambda_{123})z} \\ & + e^{-(\lambda_1 + \lambda_{13})x - (\lambda_2 + \lambda_{23})y - (\lambda_{12} + \lambda_{123})y} \\ & + e^{-(\lambda_2 + \lambda_{12})y - (\lambda_3 + \lambda_{13})z - (\lambda_{23} + \lambda_{123})z} + e^{-(\lambda_1 + \lambda_{12})x - (\lambda_3 + \lambda_{13})z - (\lambda_{13} + \lambda_{123})z} \\ & - e^{-\lambda_1 x - \lambda_2 y - \lambda_3 z - \lambda_{12} y - \lambda_{13} z - \lambda_{23} z - \lambda_{123} z} \end{aligned}$$

The probability density function

$$f_{123}(x, y, z) = \lambda_1 (\lambda_2 + \lambda_{12}) (\lambda_3 + \lambda_{13} + \lambda_{23} + \lambda_{123}) e^{-\lambda_1 x - (\lambda_2 + \lambda_{12})y - (\lambda_3 + \lambda_{13} + \lambda_{23} + \lambda_{123})z}, \quad x \leq y \leq z$$

Suppose that we want to compute the probability that

$$\begin{aligned} R_1 &= P(X \leq Y \leq Z) \\ &= \int_0^\infty \int_x^\infty \int_y^\infty f_{123}(x, y, z) dz dy dx \\ &= \frac{\lambda_1 (\lambda_2 + \lambda_{12})}{(\lambda_1 + \lambda_2 + \lambda_3 + \lambda_{12} + \lambda_{13} + \lambda_{23} + \lambda_{123})(\lambda_2 + \lambda_{12} + \lambda_3 + \lambda_{13} + \lambda_{23} + \lambda_{123})} \end{aligned}$$

Case 2: $y \leq x \leq z$

$$\begin{aligned} R_2 &= P(Y \leq X \leq Z) \\ &= \int_0^\infty \int_y^\infty \int_x^\infty f_{123}(x, y, z) dz dx dy \end{aligned}$$

$$= \frac{\lambda_2 (\lambda_1 + \lambda_{12})}{(\lambda_1 + \lambda_2 + \lambda_3 + \lambda_{12} + \lambda_{13} + \lambda_{23} + \lambda_{123})(\lambda_1 + \lambda_{12} + \lambda_3 + \lambda_{13} + \lambda_{23} + \lambda_{123})}$$

Case 3: $x \leq z \leq y$

$$\begin{aligned} R_3 &= P(X \leq Z \leq Y) \\ &= \int_0^\infty \int_x^\infty \int_z^\infty f_{123}(x, y, z) dy dz dx \\ &= \frac{\lambda_1 (\lambda_3 + \lambda_{13})}{(\lambda_1 + \lambda_2 + \lambda_3 + \lambda_{12} + \lambda_{13} + \lambda_{23} + \lambda_{123})(\lambda_2 + \lambda_{12} + \lambda_3 + \lambda_{13} + \lambda_{23} + \lambda_{123})} \end{aligned}$$

Case 4: $z \leq x \leq y$

$$\begin{aligned} R_4 &= P(Z \leq X \leq Y) \\ &= \int_0^\infty \int_z^\infty \int_x^\infty f_{123}(x, y, z) dy dx dz \\ &= \frac{\lambda_3 (\lambda_1 + \lambda_{13})}{(\lambda_1 + \lambda_2 + \lambda_3 + \lambda_{12} + \lambda_{13} + \lambda_{23} + \lambda_{123})(\lambda_1 + \lambda_{12} + \lambda_2 + \lambda_{13} + \lambda_{23} + \lambda_{123})} \end{aligned}$$

Case 5: $y \leq z \leq x$

$$\begin{aligned} R_5 &= P(Y \leq Z \leq X) \\ &= \int_0^\infty \int_y^\infty \int_z^\infty f_{123}(x, y, z) dx dz dy \\ &= \frac{\lambda_2 (\lambda_3 + \lambda_{23})}{(\lambda_1 + \lambda_2 + \lambda_3 + \lambda_{12} + \lambda_{13} + \lambda_{23} + \lambda_{123})(\lambda_1 + \lambda_{12} + \lambda_3 + \lambda_{13} + \lambda_{23} + \lambda_{123})} \end{aligned}$$

Case 6: $z \leq y \leq x$

$$\begin{aligned} R_6 &= P(Z \leq Y \leq X) \\ &= \int_0^\infty \int_z^\infty \int_y^\infty f_{123}(x, y, z) dx dy dz \\ &= \frac{\lambda_3 (\lambda_2 + \lambda_{23})}{(\lambda_1 + \lambda_2 + \lambda_3 + \lambda_{12} + \lambda_{13} + \lambda_{23} + \lambda_{123})(\lambda_1 + \lambda_{12} + \lambda_2 + \lambda_{13} + \lambda_{23} + \lambda_{123})} \end{aligned}$$

Note:

$$P(X = Y = Z) = \frac{\lambda_{123}}{\lambda_1 + \lambda_2 + \lambda_3 + \lambda_{12} + \lambda_{13} + \lambda_{23} + \lambda_{123}}$$

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Marketing Skills in High Demand: Exploratory Study of Competencies for a Marketing Professional

The background of our research is the challenge of digital development for marketing: marketing has evolved at an unprecedented rate, which inevitably has created talent gaps and shortcomings in marketing capacity, education, available technology, and implementation. Technological advances, innovative business models, cloud services, big data and many other factors have changed the nature of marketing. In this research we suggest that skills and competencies required in digital marketing pose various types of challenges for marketing education, business and learning marketing profession.

Marketing expertise is a multi-level combination of meta-skills and more technical tooling skills.

Daellenbach (2018) divides marketing skills into four areas: 1) learning and thinking skills, 2) personal interaction and collaboration skills, 3) marketing knowledge and understanding, and 4) technical skills. In his model, skills related to learning, thinking, and collaboration are at the core around which marketing knowledge and technical skills are built. The importance of learning meta-skills is also highlighted. Education should enable and develop an in-depth understanding and growth of meta-skills and technological tooling at an adequate level.

In our research we aim to identify challenges that learners, teachers, and marketing professionals in business face in the rapidly changing environment. We explore marketing learning and especially the challenges from a multifaceted perspective of students, teachers and marketing professionals working in business. Our goal is also to explore and analyze how these talent gaps or challenges could be solved both in educational institutions and in business context.

The research follows qualitative methods both in data collection and analysis. The data consists of 14 open theme interviews with marketing professionals from different industries, 4 in-depth interviews of marketing teachers and 2 focus group interviews with teachers as well. We have also observational data from classroom environment.

The data has been collected in Finland and especially in the context of undergraduate marketing education.

In a preliminary content analysis, we have identified six different challenges that contemporary marketing practices pose in business, marketing education and learning. We describe these challenges as counterparts that represent broad skills needs in marketing profession.

Challenges of marketing education are:

- 1) Challenges related to the management of professional, specific substantive skills and extensive meta-skills (e.g., interaction, teamwork, self-direction).
- 2) Competence in the marketing of traditional marketing and the utilization of new, intelligent technology-based marketing.
- 3) Analytical and on the other hand creative out-of-the-box problem-solving skills.
- 4) Specific technical expertise and holistic view of a generalist.
- 5) Quantitative data analysis understanding, and secondly skills based on empathy and emotional intelligence.
- 6) The ability to apply theoretical knowledge to solve practical problems.

In our research, we refine above mentioned marketing talent gaps and look for innovative solutions to solve these challenges in both work-based learning and in marketing education context.

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Virtual Exhibition on the Occasion of the 75th Anniversary of the Mathematical Institute SANU

This year, the Mathematical Institute of the Serbian Academy of Sciences and Arts, headquartered in Belgrade, is marking its 75th anniversary. On that occasion, a special exhibition was organized in a virtual format, conditioned by the challenges posed to the modern world by the coronavirus pandemic. The paper will review how modern digital technologies and the principles of digitization of cultural and scientific heritage have been used to present the Mathematical Institute to the public in a digital environment. What makes this virtual "setting" so specific is that it is dedicated to a scientific institution, whose premises, laboratories, and objects have been used as exhibition space and exhibits to show the development of the very institution. The paper shows that scientific institutions are not only research performing organizations, but also guardians of the past through their archives, libraries and works of art. For example, the collection of the Mathematical Institute houses representative bronze busts and portraits in oil of famous Serbian scientists, among which stands out the portrait of Mihailo Petrović, the founder of the Serbian Mathematical School, the work by the eminent realist painter Uroš Predić from 1943. Furthermore, the paper recognizes that members of scientific institutions, in addition to their primary scientific research mission, can take on the role of private collectors, whose memorabilia can complement the archival collections of scientific institutions. Thus, academician Dragoš Cvetković, a longtime member of the Mathematical Institute, shared his correspondence with famous mathematicians Richard Bellman, Paul Erdős, and Donald Knut for the purposes of the exhibition. The paper then focuses on the technical implementation of the virtual exhibition, based on the following techniques for recording and displaying selected content in a digital environment: recording the premises of the Mathematical Institute with 360° cameras to create a virtual tour, 2D scanning of archival material to obtain digital documents, 3D scanning of exhibits to create 3D models,

digitization of audio and video materials, and augmented reality technology for the purpose of connecting artefacts in physical space with the corresponding data in the digital environment. The result is a virtual exhibition containing over seventy contributions on the history of the Mathematical Institute, its mission and organization, including the ongoing research efforts and projects whose leaders are permanent and external associates. In chronological terms, the exhibition covers the framework from 1838, when the first Department of Mathematics in Serbia was established, to 2021, when the Mathematical Institute was declared an institution of national importance for the Republic of Serbia. The virtual exhibition is publicly available in two formats: as an Android and IOS mobile application, and as standard web presentation. In the concluding remarks, the advantages and disadvantages of the digital presentation of an exhibition's content in comparison to exhibition displays in a physical environment are emphasized. Although the virtual format cannot replace the experience of direct contact with the real object, it is concluded that such a model represents an adequate alternative in times of crisis or when the exhibition materials are not readily available.

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Decline and Fall: An Exploration of the PISA and TIMSS Rubrics' Effect on Mathematical Curricula and Pedagogies

In Ireland, a complete and thorough review of the mathematics curricula and pedagogies was undertaken by the Department of Education and Skills (DES) which led to the 'birth' of Project Maths. Project Maths was first piloted in 2010 and rolled out in full over a period of eight years. Its goals were to empower students to 'develop essential problem-solving skills for higher education and the workplace by engaging teenagers with mathematics set in interesting and real-world contexts (NCCA, 2016). The aims of the syllabus include: developing the mathematical knowledge, skills and understanding needed for continuing education, life and work; developing the skills of dealing with mathematical concepts in context and applications, as well as in solving problems; supporting the development of literacy and numeracy skills; and fostering a positive attitude to mathematics in the learner (DES/NCCA, 2013). Data from the Programme for International Student Assessment (PISA) show that performance on overall mathematics among 15-year olds in Ireland has been relatively stable since 2003, though there was a drop in 2009 which was however reversed in full in 2012. Indeed, Ireland's mean score in 2003 (502.8) is almost identical to its mean score in 2015 (503.7). So what prompted this complete overhaul of the Irish mathematical curriculum and pedagogies? Was it based on the drop of performance of students in the 2019 PISA test? Was it as a result of pressure from external (to education system) stakeholders to include more data analysis to prepare students for the challenges that face them in industry? Was it an effort to improve students' attitudes to mathematics? Was it all of the above combined with many other factors? This paper set out to explore the effect of the rubrics of PISA and TIMSS on the Irish mathematical education system and explore how effective Project Maths has been in attaining its goals. However, in an effort to compare the performance of students in Ireland to the performance of students of other countries in mathematics, it soon became clear that the 'problems' which manifest themselves nationally are also global. The paper presents some interesting comments by major players in mathematical education worldwide and postulates 'do we need to return to basics?'

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Teaching Project Management in Higher Education: A Systematic Literature Review and Future Perspectives

There is a growing recognition of the importance of formal project management education, as well as utility of project-based learning across a diverse curriculum. However, despite academic literature supportive of competency-based training and education in how to manage project, programs are fractured or absent from mainstream curriculum. Additionally, science fields tend to overlook business skills altogether. This study performs a Systematic Literature Review to investigate the current state of formal project management education. This review is limited to formal project, program, or portfolio management curricula within institute of higher education. Emergent trends mirror that of project management in industry settings - a lack of cohesion or uniformity in best practices and how to teach them in a variety of settings. To support educators in building curricula, the paper proposes competency-based criteria that should be considered in project management education.

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Revealing the Trust-loyalty Relationship in Tourism Local Accommodation: The Pandemic COVID-19 Crisis

The world is facing a global health, social and economic emergency with the COVID-19 pandemic and, as a consequence of this, travel and tourism are among the most affected sectors. In such a context, consumer trust plays a key role in the development and maintenance of long-term relationships between service providers and their clients. Several authors acknowledge that to gain the loyalty of customers, the firm must first gain their trust. We know very little about the effect of COVID19 on these relationships. Therefore, our research addresses the following problem: What factors may influence the perceived trust and loyalty in local accommodation during the COVID-19 pandemic crisis? From this problem, several research questions were formulated, namely: First, to what extent does perceived trust impact customer loyalty? Second, what are the major antecedents of perceived trust in the context of local accommodation during the COVID-19 pandemic? Third, does both the perceived risk and destination perceived value affect the perceived trust and loyalty relationship? The authors administered a survey questionnaire to a sample of 104 tourists. For the analysis of the empirical data collected partial least squares structural equation modelling was used. This study confirms the positive influence of affective evaluation, perceived security, and destination image on perceived trust. It also confirms the impact of perceived trust on both loyalty and destination perceived value. In turn, destination perceived value also influences loyalty. Only local accommodation reputation was found not to influence perceived trust. This article provides a practical contribution to the comprehension of consumer trust antecedents and consumer loyalty in local tourism accommodation during the COVID-19 pandemic crisis. The present pandemic context brings new challenges to marketing professionals such as perceived security and perceived trust and customer loyalty, issues that require more theoretical contributions.

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Trade-off Between Mass Customization and Choice Overload: An Eye-Tracking Study to Determine the Role of Information Processing in Online Configurations

In addition to other personality dimensions, the need for uniqueness is one of the natural drivers of customers. This leads to a preferential selection of personalized products over mass-produced commodities. To internalize the higher provisions of individualized goods, most of the companies have already established online sales systems also known as mass customization toolkits. The same holds true for most premium automotive companies which offer an online configurator on their websites. However, mass customization is accompanied by the drawback of mass confusion. For example, a typical passenger car from an OEMs can be configured with various engines types, colors, trims, and other options. This results in numerous combinations and possible choices for the customer. When the number of choices and potential combinations reach a certain threshold, the customer gets overwhelmed during the underlying configuration process. Thus, the customer is less satisfied with the choice or loses the motivation to choose resulting in a high abandonment rate during the configuration.

To put this in the theoretical context of choice experiments (CE), those configurations can be described as multi-attribute choice models. On the one hand, CEs explain the influence of product features and the trade-off between attributes of individual choices. But on the other hand, CE neglect to address the question how customers process the underlying information. Therefore, this research project examines the influence of information processing on the participants choice. Eye-tracking is used to explore the visual attention of the participant. In doing so, it may also extend current literature by examining the effect of how “attribute-non-attendance (ANA)” occur by adding the context of the underlying cognitive processes during the decision. Furthermore, it aims to provide a deeper understanding of the occurrence of the choice overload effect in a real-life multi-attribute choice setting and answer the following questions:

How does complexity reduction influence customers information processing/visual attention on multi-attribute choices during online configuration?

How do information processing strategies vary among different customer groups?

How does the information processing vary between different multi-attribute choices of different product attributes (e.g., colors, trims, motorization)

How does this relate to its subsequent decision outcome?

To answer these questions an eye tracking experiment combined with a substantial survey is conducted. Therefore, a testing environment of the BMW configurator is used with three different levels of complexity, represented in the number of attributes per product category (e.g., color, trims, etc.). The study is tested through a laboratory experiment and a field experiment in the BMW World to capture potential and real customers using a between-subject design. After the data collection ($N_{\text{Survey}} \sim 220$, $N_{\text{Eye-tracking}} \sim 150$ (appropriate data quality)), Areas of interest (AOIs) are created to extract the eye tracking metrics of interest to compare the different eye movement patterns among different product categories (e.g., color, trims). The outstanding combination of an eye-tracking experiment in a laboratory and field setting complemented by the extensive survey is likely to extend beyond experimental choices to represent actual choices in a natural environment.

Jan Reid

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A Study of Expected Demand and Aggregate Employment in the United States from 1948 to 2021

My paper provides interim results of the empirical portion of my PhD dissertation. I hypothesize that “Firms increase and decrease employment in response to changes in expected demand.”

The paper seeks to answer the question “What are the determinants of changes in aggregate employment in the United States of America [U.S.]?” This is an important research topic because significant increases in unemployment can have a profound effect on the entire society, not just on unemployed workers. When employment declines, public health

declines, crime increases, suicides increase, and public revenues decrease. Government is then placed in the unenviable position of facing increased demand for services at the very time that revenue is declining.

During an economic decline, governments can become unstable, and unsavory individuals can rise to positions of power. For example, Adolf Hitler rose to power in Germany in 1929 during the Great Depression. Eberhard Kolb has explained that “The Great Depression provided a political opportunity for Hitler. Germans were ambivalent about the parliamentary republic, which faced challenges from right- and left-wing extremists. The moderate political parties were increasingly unable to stem the tide of extremism, and the German referendum of 1929 helped to elevate Nazi ideology.” (Kolb E. 1988, p. 105).

The paper uses quarterly data from 1948-2021 and estimates the effect of important macroeconomic variables on aggregate employment. The macroeconomic variables will include personal consumption expenditures, U.S. federal government expenditures, nominal GDP, international trade (imports plus exports), M3 money stock, the minimum wage level, nonresidential fixed investment, non-manufacturing employment, and U.S. federal tax receipts.

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&
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An Application of Finite Mixture Models in Positional Accuracy

The hypothesis of normality in the case of error measurements appears from the beginning of the normal distribution itself, since Gauss arrived at it by analyzing measurement errors in astronomical observations. The fact that some errors or residuals are normally distributed implies that they are due to pure chance, and there are no other causes that explain them. In addition, the normality hypothesis is basic when it comes to proposing the contrasts of hypotheses on errors, both for mean values and for variances. However, in practice it is difficult to find measurement error data that are distributed according to a normal distribution. One cause is that these data really come from another distribution, but in many cases, it is due to the fact that the set of observations has been obtained from different normal distributions, with different means and/or variances, and the mixture of all these data in a single data set does not have to follow a single normal distribution. In these situations, the data show possible multimodality, and/or a more sharpened shape than the well-known Gaussian bell.

In these cases, the finite mixture technique of Gaussian distributions can be applied. It consists of decomposing the data into multiple normal distributions, estimating the mean and the corresponding variance, as well as the probability in the mixture. In this way, a population model can be generated that allows a better understanding of the nature of the analyzed variable.

Positional accuracy has always been considered a defining and essential element of the quality of any geospatial data, as it affects factors such as geometry, topology, and thematic quality; and it is directly related to the interoperability of spatial data. For its assessment, many procedures have been developed and many of them (for instance, EMAS or NMAS tests) and many of them require the underlying hypothesis of normality, which, however, is not easily found in sample data, but can be adequately adjusted by means of a finite mixture of normal distributions. In this work an application of the

finite mixture model is presented for data from an airborne laser scanner (ALS) campaign flight over the province of Ávila (Spain). In this case altimetric errors have been obtained on different types of terrain. These data can be adequately modelled by a Gaussian finite mixture model through an adequate estimation procedure, and the subsequent parametric model is obtained. This model fits accurately the real data set and that be employed in further inferential analysis better than the assumption of normal distribution.

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&

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Financial and Social Implications of DC Pension Funds Aggregation

Defined-contribution pension saving systems are generally harmful to disadvantaged employees who fail to save enough for retirement and pay the highest management fees. In Israel, there are two disadvantaged sectors in the population, Arabs and ultra-Orthodox Jews. This study offers to improve the pension savings of disadvantaged employees by aggregating their pension contributions. The study was conducted based on Israeli data and measures the impact of the aggregation from two perspectives. The social perspective, by reducing poverty and inequality among retirees, and the financial perspective, by reducing government expenditure on support payments. We find that the implementation of the aggregation model proposed in this paper increases the substitution ratio of disadvantaged employees by 32 percent. It reduces the proportions of retirees in the lower-income deciles and raises their proportions in the higher-income deciles. The aggregation is also expected to reduce government expenditure on support payments to retirees by about 63%.

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&

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Chinese FDIs in Ghana: Impacts, Threats and Opportunities

In recent years China's outward foreign direct investment flows have increased dramatically, and African countries have become important destinations for FDI from China. Even during the pandemic, Chinese FDI to Africa increased by about 10% from 2019 to 2020. However, this raises the question of the impact of this trend on the recipient countries. Taking Ghana – one of the African countries prioritized as a recipient of FDI by China, especially in construction and manufacturing – as a case study, this paper investigates which opportunities and benefits Chinese FDIs entail for Ghana in terms of economic development, poverty alleviation and employment. The impact of Chinese economic engagement in Ghana with respect to raw materials and cash crops is not discussed in this paper. Furthermore, we will analyze threats that are connected to this development. Experiences from Chinese FDI in Europe (as compiled by Brennan and Bakis 2016), with special focus on the labor market, will serve as comparative cases to unveil potential power relations. Characteristics of Southern versus Northern multinational enterprises serve as a theoretical foundation (e.g., Nölke 2014).

Codruta Stoica

Professor, "Aurel Vlaicu" University of Arad, Romania

A Study in Discrete Time of Trichotomic Issues

Based on recent findings, mathematical models for diverse phenomena arising in economics, biology or engineering, which are constantly evolving in sophistication, can also be approached by analyzing the corresponding evolution equations and discrete time dynamical systems via evolution families.

D.B. Henry, who researched the property of dichotomy in the discrete context in 1981, took one of the significant steps in the area of evolution equations. D.B. Henry characterizes the existence and invariance at perturbations of the property of exponential dichotomy for families of evolution operators in terms of input-output type conditions, in the spirit of O. Perron's classical theory from 1930.

Researching this subject, we address in this work the concept of a discrete time evolution cocycle in Banach spaces. It is urged that some uniform asymptotic features, such as trichotomy, be treated uniformly. A novel concept of exponential trichotomy is also proposed. The results are generalizations of certain well-known stability theorems in a discrete setting. Some applications are also available, to underline the theoretical results.

Milica Stojanović
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Toroids, 3-Triangulation and Graph of Connection

If 3-triangulation of toroid is possible, their decomposition into convex pieces is considered. Graph of connection for 3-triangulable toroid is introduced in such a way that these pieces are represented by graph nodes.

It is shown that any connected, nonorientable graph can serve as a graph of connection for some of the toroids. The relationship between graphs that can be realized on surfaces of different genus and corresponding toroids is considered.

Andrey Stoyanov
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Female Labor Supply and International Trade

We study the effect of spatial variation in female labor supply on international trade flows. We identify the set of gender-specific skills and argue that low female labor supply reduces the endowment of female-oriented skills and undermines comparative advantage in industries which use female labor intensively. We confirm this hypothesis using two different settings. First, we show that countries with low female labor supply, measured by female labor force participation, have comparative disadvantage in female-labor-intensive industries. To establish causality, we instrument female labor supply with cross-country differences in cultural values regarding the role of women in society. Second, we confirm the main hypothesis on trade data from Chinese regions. Using spatial variation in sex ratios resulting from the One Child Policy (OCP), we rely on the stringency of OCP as an exogenous female labor supply shifter. Other things equal, regions with higher female population share specialize in industries which use female labor intensively. We interpret our results as highlighting the importance of labor force gender composition for industry's productivity. Our results imply that the effect of gender imbalances in labor supply on labor market outcomes, observed in many parts of the world, can be mitigated through international trade by utilizing relatively abundant type of labor in export-oriented industries.

Ilona Teglassi

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Motivation and Development – Using Poly-Universe Game in Teaching Mathematics

“Children learn as they play. Most importantly in play children learn how to learn.” (O. Fred Donaldson)

Motivation and development of different skills are keywords in teaching mathematics all over the world – and how can we achieve these better than by playing? János Saxon-Szász, a Hungarian artist invented the Poly-Universe game. It is a game of arts and mathematics. In our presentation and paper we would like to introduce the artistic and methodological background of using the game in teaching different fields of mathematics on different ISCED levels. As well, in an international consortium (Poly-Universe in Teacher Training Education, Erasmus+ Strategic Partnership, 2020-1-HU01-KA203-078810) we have a research project on how to implement these methods into teacher training education through using the Poly-Universe game. After the first semester of pilot courses in our partner institutions we would like to present the experiences and outcomes of them – and to raise your interest in further development.

Joan Miguel Tejedor Estupiñán

Associate Professor, Universidad Católica de Colombia, Colombia

Economic Impacts of the Free Trade Agreement Between the European Union and Colombia

During the first decades of the twenty first century the European Union (EU) has been the second preferred destination of Colombian exports and the third country of origin of Colombian imports, this confirms that the EU is one of the most important trade partners of Colombia. Nevertheless, in the seven-years post-agreement period, show an uneven performance of bilateral trade between the EU and Colombia. The EU-Colombia FTA was signed on June 26th 2012 and entered into force on 1 March of 2013. It is a plurilateral and intra-regional trade agreement where the developed region is represented by the EU-28 countries and the developing country is represented by Colombia. Considering the theories and methods of regional integration and free trade agreements, the main purpose of this paper is to provide an answer to the next question: 'How is corruption, flawed democracies and low deep negotiations of free trade agreements related with low performance of free trade agreements and unequal distribution of the benefits of free trade?'. Many scholars currently have developed several methods for ex-ante and ex-post economic evaluation of FTAs in order to understand the trade effects of economic liberalisation and free trade. However, these models do not pay attention to the social impacts of an FTA, for example, the impacts on labour rights and sustainable development. Therefore, taking into consideration that the agreement already entered into force, it is not possible to develop an ex-ante economic evaluation. It is important to take into account that the major part of the theoretical and empirical modelling for assessing the impacts of free trade agreements (FTAs) was produced in the context of developed countries. Consequently, this research implements an ex-post economic evaluation founded in a multidisciplinary methodological approach that includes the qualitative analysis proposed by Jacob Viner and additional methods such as the horizontal depth analysis of the free trade agreement and the analysis of several trade indexes. The methodology and data for developing a multidisciplinary approach is presented in the fourth chapter. This study is based on data from United Nations Commodity Trade Statistics Database (UNSD-COMTRADE). WITS, include several databases provided by partner international organizations and other sources such as the UNCTAD Trade Analysis and Information System

(TRAINS) and the World Trade Organization's integrated database (IDB - WTO) and consolidated tariff schedule (CTS-WTO). This research uses disaggregated data from the World Bank COMTRADE data-base. The figures used in the simulations are for the year 2019 and are based on the harmonized system at the six-digit level. The main conclusions show that despite the EU and Colombia FTA is a relatively high depth agreement, the legal enforceability of social provisions is quite weak into the agreement affecting the implementation of the labour provisions and the achievement of trade and social ambitions. The conclusions also illustrate that expected effects of the FTA implementation are different between developed and developing countries meaning that it is not easy for developing countries such as Colombia to exploit the benefits of FTAs. This research shows that due the persistent development gaps, developing economies with flawed democracies, complex internal conflicts and low level of trade openness cannot exploit the benefits of an FTA in the same way as developed countries do.

Henry Thompson
Professor Emeritus, Auburn University, USA

Some Empirical Evidence on Comparative Advantage and Net Exports

The present paper examines relative unit labor inputs and net exports in models with three, four, and five regions and products aggregated from the World Input-Output Database. The relative inputs rank the comparative advantage for each pair of products. The approach is to assume the terms of trade most consistent with observed net exports. The trade patterns predicted across seven different aggregations include multiple exports and two-way trade. Model predictions prove largely consistent with net exports supporting the original insight of Ricardo on the importance of relative prices to trade.

Julien Trevisan

PhD Student, Laboratory IMJ-PRG, France

Limit Laws in the Lattice Problem

The lattice point problem is an old problem. Indeed, it was already studied, in a particular case, by Gauss and, in fact, this particular case was later named the Gauss circle problem. The general formulation of the problem is the following. If we give us a measurable set S of \mathbb{R}^d of finite volume and a lattice L of \mathbb{R}^d , what is the number of points $N(tS + X, L)$ that belong to the lattice L and to the dilated and translated set $tS + X$, with $t > 0$ and X a vector of \mathbb{R}^d ? If the set S is regular enough, it can be shown that $N(tS + X, L) = t^d \cdot \text{Vol}(S) / \text{Covol}(L) + o(t^d)$. We take interest in studying the error term : $R(tS + X, L) = N(tS + X, L) - t^d \cdot \text{Vol}(S) / \text{Covol}(L)$. More precisely, we take interest in what is happening to $R(tS + X, L)$ when L is a random unimodular lattice and when t tends to infinity. We show that, for different kinds of sets S , there is a convergence in distribution of the error term $R(tS + X, L)$ towards a non-trivial law when $R(tS + X, L)$ is normalized appropriately. To this end, we use different tools from harmonic analysis, geometry of numbers, probability and dynamics (the geodesic flow in the unimodular lattices space playing a key role).

Aaron Trocki

Associate Professor, Elon University, USA

Teaching for Metacognition in a College Calculus Course

Numerous educational researchers have documented the potential of metacognitive strategies for achieving inclusive excellence in STEM higher education (e.g., Tanner, 2012). Metacognitive strategies and evidence-based pedagogical practices have proven indispensable for promoting the success of students from diverse backgrounds (e.g., Major, Harris, & Zakrajsek, 2015). In this study, research was conducted on the effectiveness of a course design that infused metacognitive learning strategies on students' perceptions of learning in a first-year college mathematics course. Writing-to-learn materials and activities were grounded in a complementary perspective of constructivist and sociocultural theories of learning as conceptualized by Cobb (1994) who accounts for both what students learn and how they interact to do so. The foci of disciplinary content, metacognitive strategies, and student writing was intended to address the intense learning demands of an early undergraduate course in mathematics.

The researcher designed and taught an Applied Calculus course in this study. Twenty-four students participated and represented differences in prior knowledge and social and racial backgrounds. The course design contained two major components. First, students read the book, *Teach Yourself How to Learn: Strategies You Can Use to Ace Any Course at Any Level*, by McGuire (2018). This reading was required and comprehension was assessed with written reading reflections on each of the ten chapters. Students responded to the following three questions in each written reflection: (1) What is the main point(s) of this reading? (2) What information did you find surprising? (3) How will the content of the reading affect your approach to learning and studying math? The second component was to open each class session with math questions that linked previously addressed content to new content. These questions contained requests to explain thinking and students worked collaboratively to respond. After student collaborated, student thinking and answers were shared with the whole class.

To address course effectiveness, the researcher gathered data in three ways. First, student reading reflections about metacognitive learning strategies were collected. Math questions used to open each class session were recorded along with samples of student work. Finally, students responded to pre-course and post-course questionnaires. In the pre-course questionnaire students provided their

perceptions of teaching and learning in previous mathematics courses they had taken. In the post-course questionnaire, students provided their perceptions of teaching and learning in the Applied Calculus course that had just completed. Questionnaire results allowed for comparisons of student perceptions of teaching and learning. Data analysis revealed significant effects to student perceptions of learning mathematics and increases in metacognitive strategy utilization.

Sameh Turki

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Existence and Boundary Behavior of Positive Solutions for a Coupled Fractional System

We consider the following semi-linear fractional system

$$D^\alpha u = p(t)u^a v^r, \quad \text{in } (0,1),$$

$$D^\beta v = q(t)u^s v^b, \quad \text{in } (0,1),$$

$$\lim_{t \rightarrow 0^+} t^{1-\alpha} u(t) = \lim_{t \rightarrow 0^+} t^{1-\beta} v(t) = 0,$$

where $\alpha, \beta \in (0,1)$, $a, b \in (-1,1)$ and $r, s \in \mathbb{R}$ such that $(1 - |a|)(1 - |b|) - |rs| > 0$.

D^α, D^β are the Riemann-Liouville fractional derivatives of orders α, β and the nonlinearities p, q are positive measurable functions on $(0,1)$. Applying the Schäuder fixed point theorem, we establish the existence and the boundary behavior of positive solutions in the space of weighted continuous functions.

Otmar Varela

Professor, University of Arkansas, Little Rock, USA

Teaching, Research, and Service as Drivers of Academic Career Success

Teaching, research, and service is the triad most commonly used to describe the content of academic jobs. To attain professional success, faculty must strike some form of balance among all three aspects of the job. And while the mission of the institution might weigh teaching, research, and service differently, faculty are still expected to deliver exceptional instruction, engage in professional service, and maintain a serious commitment to scholarly work.

Critics assert that the balance between the areas of academic jobs is a mere aspirational goal that contrasts with a long-lasting culture that over glorifies research and pinpoints faculty with notable research productivity as models to be emulated. In response to this, numerous initiatives have attempted to counter any disproportionate attention that research has gained and thus, restore some form of balance between the distinct aspects of academic jobs. As the number of initiatives to restore the balance intensifies, the time is ripe to evaluate if such efforts have impacted business faculty careers. We ask, to what extent the professional success of faculty is driven by a more pluralistic, less research centric, view of careers?

In this study, we rely on career success as criterion for observing how higher education, business schools in our case, validate, via extrinsic incentives (e.g., salary), faculty dedication to teaching, research, and service. We also approach career success as a means to examine if faculty are intrinsically gratified (i.e., subjective career success) by their dedication to the distinct aspects of their jobs. To avoid a skewed view of academe, our study spans to business faculty from a wide array of institutions (i.e., research intensive and teaching-research balanced). Specifically, we examine the impact of proficiency in the three main areas of academic jobs – teaching, research, and service – on objective (e.g., salary) and subjective (i.e., satisfaction) indicators of academic career success.

Results from a sample (N=182) of tenure-track faculty working for business schools in the U.S. reveal that research proficiency is the only aspect of academic jobs that accounts for objective indicators of career. We also found that career length explains subjective career success with none of the three areas of academic jobs directly impacting this criterion. However, we found that research proficiency moderates the

impact of career length on subjective career success. Findings indicate that efforts to elevate the role of teaching and service for professional success in academe are falling short and that the so-called research centric culture in business schools is more prevalent than expected. We discuss our findings in the context of career theories and interpret their practical implications for the viability of business schools.

Peter Vranas

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Natural Deduction for Quantified Pure Imperative Logic

Quantified pure imperative logic (QPIL) deals with arguments whose premises and conclusions are imperative sentences that may contain quantifiers. QPIL can be used to symbolize, for example, the reasoning from “close the door of every office in the basement” to “if your office is in the basement, close its door”. I present a natural deduction system for QPIL, consisting of replacement and inference rules that represent “natural” patterns of reasoning and that can be used to derive an imperative conclusion from a set of imperative premises. Then I prove that the system is sound and complete with respect to a semantics based on previous work.

Lina Vyas

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Kong

**Advancing Work- And Family- Associated Outcomes for
Employees of Small and Medium Enterprises in Hong
Kong: A Study on Workplace Supervisor Support with
Smartphone-Based and Capacity-Building Interventions**

Dual-income families are becoming very common in post-industrial cities such as Hong Kong. This, however, causes tension between working parents due to demands for resources from two competing domains: work and family. The local working population reported work-family conflicts between their jobs and family caring. Their work is not only limited to their work-related tasks but also their physical ability to care for children and do household chores, bringing a negative impact on their emotions when they are back home. Providing family-friendly programs (FFPs) is thus a crucial policy in modern-day human resource management for reducing work-family conflicts.

Empirical studies highlight how supervisor support for subordinates' work-life balance (i.e. supervisor flexibility and supervisor sensitivity) is directly associated with lower levels of work-family interference; and how workplace interventions (e.g., alternative work arrangements; perceived flexibility) have to be implemented alongside supervisor support to achieve desired outcomes. A family-supportive work environment features family-supportive policies and supervisors. It encourages organizational efforts towards balancing work and family responsibilities. Therefore, in reducing family-work conflict, the supervisors are key targets for interventions.

However, most relevant studies focus on the United States; there is none yet in Asian perspectives. Likewise, almost none of these studies have capitalized the benefits of big data and communication technology to enable efficient data collection, real-time analysis and effective stakeholder interaction. Using a cluster-randomized experiment design and a process of smartphone application development, this study evaluates the impact of supervisor training interventions on their subordinates' job- and family-related outcomes in small and medium enterprises (SMEs) based in Hong Kong using ecological momentary assessment.

The study undertakes a 4-month randomized controlled trial intervention. Using a 2x2 factorial design, 320 supervisors randomly clustered into four groups: 1) no intervention; 2) receiving family-supportive-supervisor training; 3) receiving creativity-training for

supervisors; and 4) receiving both interventions. The study assesses the impact of supervisor training and supervisor creativity intervention program on job- and family-related outcomes through mediating effect of family-supportive supervisor behaviours. The creativity of the supervisor is crucial in his/ her customisation of a FFPs that resolves conflicts between work and non-work/ family issues.

This analysis adopts the job-demands-resources model (Bakker et al., 2003; Demerouti et al., 2001) and the social exchange theory (Bagger & Li, 2014). It examines the mediating role of (a) quality of perceived exchange relationship, (b) social exchange between the supervisor and the subordinate, (c) social norm regarding the utilization of family-friendly policies, and (d) work-life-balance or conflict in the link between family-supportive supervisor behaviours and job-related outcomes. The results of this study will serve as the foundation for HR policy development in Hong Kong regarding family-friendly employment practices in order to further improve the employees' work-life balance.

Ching-Yan Wu

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Crossing the Chasm: The Case of Taiwan's Electric Scooters

Because of their mobility and affordability, motorcycles are a primary mode of urban transportation worldwide, especially in emerging countries. However, the noxious exhaust emitted by motorcycles harms human health and contributes to global warming; thus, a timely transition to non-emission green transportation is urgently required to create a health-friendly environment and mitigate climate change. Electric scooters, which do not release emissions, are an ideal solution for urban transportation challenges. The first battery-powered motorcycle was introduced in Taiwan in 1968. However, despite efforts by the Taiwan government and the industry to promote and grow this market for more than half a century, the market only experienced substantial growth in recent years. Electric scooter sales grew considerably from dozens of units a month before 2015 to more than 10,000 units a month in 2019, at which point electric scooters accounted for 18% of the overall motorcycle market (comprising both battery and fuel-powered motorcycles) in Taiwan, suggesting that the chasm of adoption of electric scooters has been crossed. To explore the main factors that influence the success of the electric scooter industry in Taiwan, the present study investigated the evolution of Taiwan's electric scooter industry and examined the business models that were applied in the market. To clarify the dynamics of market development, the present study also conducted a content analysis to analyze 5,366 news reports on electric scooters that were published between 1968 and 2019 in Taiwan. In-depth semi-structured interviews with industry experts were conducted to verify the content analysis results and acquire additional information that were not revealed by news reports. The research results indicated that the monetary incentives offered by the Taiwan government to potential electric scooter purchasers did not trigger the decisive growth of the electric scooter market. By contrast, the innovative battery-swap business model successfully addressed the mileage limit problem of electric scooters and eliminated the inconveniences associated with battery charging, which previously hindered the adoption of electric scooters. The streamlined designs and high-end technological features (e.g., Internet of Things technologies) of new-generation electric scooters attracted numerous adopters despite the high launch prices of these scooters. The establishment of a battery-

swap ecosystem further expanded the electric scooter market. Several brands have collaborated to provide more product options for a wider range of budgets. Notably, perception of environmental protection did not influence the adoption of electric scooters in Taiwan. This study contributes to extend the research of crossing the chasm pioneered by Geoffrey A. Moore to bridge not only the literature gap to demonstrate how the chasm is crossed by government-led public policy but also, more importantly, empirically verified how firm-led innovative business process is imperative in alliance with the public policy.

Timothy Young

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&

Ampalavanar Nanthakumar

Professor, State University of New York, USA

On the Use of Copula for Quality Control Based on an AR(2) Model

Manufacturing for a multitude of continuous processing applications in the era of automation and 'Industry 4.0' is focused on successful application of statistical process control (SPC). This study addresses the significant problem of positive autocorrelation in data collected from online sensors which may impair SPC in real-time settings. This paper expands upon a previous paper investigating the performance of 'Copula' based control charts by assessing the average run length (ARL) when the subsequent observations are correlated and follow the AR(1) model. Control Limits using the copulas and the AR(2) model were developed with two criteria for the comparison; Coverage Probability and the Average Run Length (ARL). The following copulas were used in the study; Gaussian Copula, Clayton Copula, Frank Copula, and Gumbel Copula. The Gumbel Copula failed the Coverage Probability criteria. Other copulas passed this coverage probability criteria at the 95% for the nominal coverage level. Only the Gaussian Copula passed this ARL criteria. Clayton Copula and Frank Copula failed this ARL criteria. The Gaussian Copula seems appropriate if the copulas are to be considered in Quality Control, especially in an AR(2) situation.

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Rosamarie Frieri

Researcher, University of Bologna, Italy

&

Alessandro Baldi Antognini

Professor, University of Bologna, Italy

Optimum Allocations for Exponential Trials

The main goal of this talk consists in designing randomized multi-arm clinical trials for treatment comparisons in order to achieve a suitable trade-off between inferential and ethical demands. The focus is on the appropriate balance of statistical precision –expressed by the power of the usual Wald test of homogeneity between the treatment effects (i.e., the classical t -test for the case of two treatments) –and ethical concerns related to the patients care. In this presentation, we will consider exponential responses which are particularly relevant for oncological trials with survival endpoints.

In particular, we present a multipurpose design methodology, based on unconstrained or constrained optimization with inequality restrictions, in order to derive the treatment allocation proportions maximizing the statistical power of the multivariate test of homogeneity of the treatment effects under a suitable ethical constraint reflecting their efficacy.

The resulting optimal unconstrained target is a degenerate allocation assigning all the subjects to just two treatments, namely the best and the worst one (while the remaining treatments have no assignments). This optimum allocation is clearly inadequate for both inferential and ethical purposes. Indeed, from an inferential viewpoint, any estimation procedure will be unreliable, since consistent information for all the considered treatments is not provided. Furthermore, this target assigns a considerable proportion of patients to the less effective treatment, making the allocation highly unethical. Whereas, the constrained optimal solution has a very simple analytical form, guaranteeing very good performances in terms of ethical demands, power and estimation precision.

Tobias Zander

PhD Student, University of Wuppertal, Germany

FDI Flows and the Effects of the Shadow Economy: Evidence from Gravity Modelling

This paper will explore the questions if and what the effects of the size of shadow economy on FDI flows are. For this, two different datasets are used: one is an OECD-only dataset that allows for bilateral, bidirectional FDI flow data for the years 1992 - 2017 and the other is a dataset that has outward FDI flows from OECD origin countries into 158 target countries for the year 2010 - 2018. To analyze the datasets both fixed effects as well as dyadic fixed effects gravity models are used. Preliminary results suggest, for the OECD-only sample, a positive effect of the shadow economy on FDI flows for target countries and a negative effect for origin countries. This could suggest, that in the OECD only sample, there are benefits that can be gained for companies when investing in countries with a bigger shadow economy that outweigh the associated risks. For outward FDI flows from OECD countries (Dataset 2), early findings suggest that the size of the shadow economy has a negative effect on FDI flows for the target countries. This could suggest that there is a tipping point in the size of the shadow economy as for OECD countries the shadow economy is fairly small when compared to other non-OECD countries. If that tipping point is exceeded it turns the effect of the shadow economy from a positive into a negative, suggesting that the risk of investing in a country with a bigger shadow economy is too high and does outweigh the benefits significantly.

Cataldo Zuccaro

Professor, University of Quebec in Montreal, Canada

Michel Plaisent

Professor, University of Quebec in Montreal, Canada

Younes Benslimane

Associate Professor, York University, Canada

&

Prosper Bernard

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The Perceived Importance of Factors Affecting the Risks and Benefits of Cloud Computing: A Managers' Perspective

The demand for cloud computing services has grown dramatically during the last decade. According to a study undertaken by MarketsandMarkets.com (2021) the global cloud computing market size is expected to grow from USD 445.3 billion in 2022 to USD 957.3 billion by 2026. This growth will also accelerate as the work from home (WFH) initiatives take route worldwide partly fueled by the COVID-29 pandemic. In general terms, cloud computing allows business enterprises and government agencies to use the servers of providers of cloud computing services on the internet to store, manage and process both critical and large amounts of data quickly and securely. More specifically, cloud computing provides its users the capacity to store and access large amounts of data (text, video, transactional and social media) quickly, securely and at lower costs than the centralized corporate IT infrastructures. However, as with any new technology, its adoption is fraught with uncertainty and missteps. Unfortunately, there have been many cases where the integration of cloud computing has produced more problems than benefits. Undeniably, the introduction of cloud computing can be very disruptive and costly to the organization and this ensuing uncertainty has generated mixed reactions and attitudes towards cloud computing among both IT and corporate managers. In addition, the spate of highly publicized major intrusions in cloud servers recently has infused increased skepticism in the minds of managers as to the benefits of cloud computing. Given the vital importance of cloud computing to both corporate and governmental organization and the mixed attitudes towards it, the authors undertook a survey to understand better this very complex issue. To shed light on managers' attitudes towards cloud computing, a questionnaire administered through SurveyMonkey was sent to a convenience sample of one thousand managers in different corporate positions and in

different countries. Two hundred and twenty-five respondents returned the questionnaire for a response rate of 22.9%. Managers' perception and attitudes towards cloud computing were measured by obtaining their assessment of the global organizational risk cloud computing represented for them on a scale of 100 points where zero represented very low risk and one hundred very high risk. To obtain a more in-depth perspective of their assessment, the responding managers provided their perceived importance of thirty-five specific areas of major risk on a five-point rating scale where 1 was not all important and 5 of highest importance. A component analysis of the thirty-five risk areas generated a six-component structure reproducing sixty five percent on the total variance. The first component named 'data and operational security' dominates the structure with 41.18% of the total variance explained. To determine the relative importance of the thirty-five risk areas, a multiple discriminant analysis was performed on the regrouped variable, 'global organizational risk of cloud computing'. The dependent variable represented the overall risk assessment grouped into three levels, low, moderate and high risk. Two statistically significant discriminant functions were identified with an overall correct classification rate of 68%. The study provides very useful insights into the complex dynamics of the major elements that influence managers' perceptions of the inherent risks of pursuing cloud computing strategies, the links between the perception of these risks and the general attitudes towards cloud computing.

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